

1992 Index to *Missouri Epidemiologist*

ARTHROPODS

Ehrlichiosis	
annual summary 1991	J/S92
Lyme disease	
(see LYME DISEASE)	
Rocky Mountain spotted fever	
annual summary 1991	J/S92
Tick-borne disease	
annual summary 1991	J/S92
Tularemia	
annual summary 1991	J/S92

CHOLERA

Teaching materials	M/A92
Updates	J/F92,M/J92

COMMUNICABLE DISEASE

SUMMARIES

Annual summary 1991	J/S92
Outbreak summary 1991	J/S92
15 year report	J/S92

COMMUNICABLE DISEASE

SURVEILLANCE

Communicable disease	
coordinators	J/F92
<i>E. coli</i> O157:H7	
now reportable	J/F92,M/J92
Group B streptococcus	
bacteriuria in Missouri	O/D92
Special surveillance for	
invasive bacterial diseases	J/F92
National electronic system	
for surveillance (NETSS)	M/A92
Reporting hotline	J/S92

DIARRHEAL ILLNESS

<i>E. coli</i> O157:H7	
now reportable	J/F92,M/J92
Enteric diseases	
annual summary 1991	J/S92
Food safety costs	O/D92
Foodborne outbreaks associated	
with catered meals	O/D92
Food preparation regulations	O/D92
Gastrointestinal illness	
related to birthday party	O/D92
related to catered meals	O/D92
related to golf tournament	O/D92
related to leftovers	O/D92
Outbreak associated with	
dunking booth	M/A92

<i>Salmonella braenderup</i> at	
holiday party	O/D92
<i>Salmonella infantis</i> associated	
with wedding	J/F92,O/D82
<i>Salmonella muenchen</i>	
at barbecue	O/D92
Shigellosis	
increase in 1992	J/S92

ENVIRONMENTAL

Bureau of Environmental	
Epidemiology	
1992 report	J/S92
Community sanitation	
new bureau chief	M/J92
Cremation authorization	J/F92
Dioxin hotline	J/S92
Missouri fatal accident circumstances	
and epidemiology	
(MOFACE)	M/A92,O/D92
Ice survey—Missouri 1990	J/F92
Lead in school drinking water	J/F92
Radon	
awareness in Missouri	M/J92
concentrations in	
Missouri schools	J/F92
hotline	J/S92
risk levels	M/J92

FOODBORNE ILLNESS

Ciguatera poisoning linked to	
Florida Amberjack	J/F92
<i>E. coli</i> O157:H7	
now reportable	J/F92,M/J92
Enteric diseases	
annual summary 1991	J/S92
Food safety costs	O/D92
Foodborne outbreaks associated	
with catered meals	O/D92
Food preparation regulations	O/D92
Gastrointestinal illness	
related to birthday party	O/D92
related to catered meals	O/D92
related to golf tournament	O/D92
related to leftovers	O/D92
Hepatotoxicity associated	
with chaparral	O/D92
Outbreak associated with	
dunking booth	M/A92
<i>Salmonella braenderup</i> at	
holiday party	O/D92
<i>Salmonella infantis</i> associated	
with wedding	J/F92,O/D82

<i>Salmonella muenchen</i>	
at barbecue	O/D92
Scombroid fish poisoning	
in Atlanta	O/D92

HEPATITIS

Annual summary 1991	J/S92
Hepatitis A	
epidemic in Missouri 1992	O/D92
immune globulin	
recommendations	M/J92
trends in Missouri 1991	J/F92
trends in Missouri 1992	J/S92
waterborne associated with	
church and school	O/D92
Hepatitis B universal	
vaccination	M/J92
Hepatotoxicity associated	
with chaparral	O/D92

HOTLINES/PHONE NUMBERS

AIDS hotline	J/S92
CDC voice information on	
nosocomial infections	M/J92
Communicable disease	J/S92
Dioxin	J/S92
Radon	J/S92

IMMUNIZATION/VACCINE

PREVENTABLE DISEASE

Annual summary 1991	J/S92
<i>Haemophilus influenzae</i>	
annual summary 1991	J/S92
special surveillance for	J/F92
vaccine for child	
care attendees	J/F92
Immunization action plan	M/J92
Incidence in preschool	
age population	J/F92
Influenza/pneumonia	
immunization	
recommendations	O/D92
summary 1991-92 season	M/J92
Mumps added as requirement	
for school attendance	O/D92
Polio threat 1992	O/D92
School immunization	
law changes	O/D92
Vaccine information pamphlets	J/F92

LONG RANGE PLANNING

Department of health strategic plan	
for year 2000	M/A92,O/D92

LYME DISEASE

Erythema migrans rash investigation in Missouri	M/J92
Lyme disease investigation in southeast Missouri	J/F92
Malariotherapy for	J/F92
Serology update	M/A92

MALARIA

Malariotherapy for Lyme Disease	J/F92
---------------------------------	-------

MYCOBACTERIA/ TUBERCULOSIS

Drugs for mycobacteria	M/J92
Tuberculosis	
annual summary 1991	J/S92
awareness	J/F92
drug resistant incidence in Missouri	M/J92
elimination	M/J92
incidence in Missouri schools	M/A92
para-aminosalicylic acid availability	M/A92,M/J92
pre-admission testing for nursing home residents	O/D92
streptomycin alternatives	M/J92
streptomycin	
availability	M/A92,M/J92
walk/run	M/J92

NOSOCOMIAL INFECTIONS

CDC voice information on nosocomial infections	M/J92
Group B streptococcus bacteriuria in Missouri	O/D92
Special surveillance for invasive bacterial diseases	J/F92
Infection control guidelines for long term care facilities	J/F92
Outbreak summary 1991	J/S92
Platelet transfusion	
associated sepsis	M/A92
Postsurgical infections associated with implantable devices	M/J92

OCCUPATIONAL

Asbestos exposure in custodians	O/D92
Bureau of Environmental Epidemiology	
1992 report	J/S92
Missouri fatal accident circumstances and epidemiology (MOFACE)	M/A92,O/D92

New STD Program Managers in Kansas City and St. Louis

Nyla DeArmitt reported to the Kansas City Health Department as Program Manager of the Sexually Transmitted Disease (STD) program on October 4, 1992. Ms. DeArmitt is a public health advisor with the Centers for Disease Control and Prevention (CDC).

She started her career as a public health advisor in the St. Louis City STD program and then worked in the North Carolina STD program as a supervisor in Charlotte.

Joseph Betros, a public health advisor with the CDC, has worked extensively with STD programs in Chicago, Cleveland and Miami before his assignment as the STD program manager in the St. Louis City Department of Health and Hospitals on December 14, 1992.

These two public health advisors bring a wealth of valuable experience which will help each city meet the challenge of increasing STD morbidity.

Occupational fatality prevention program	M/A92,O/D92
--	-------------

OFFICE OF EPIDEMIOLOGY

Physician epidemiologist joins staff	O/D92
--------------------------------------	-------

RABIES

Annual summary 1991	J/S92
---------------------	-------

SEAFOOD

Ciguatera poisoning linked to Florida Amberjack	J/F92
Scombroid fish poisoning in Atlanta	O/D92

SEXUALLY TRANSMITTED DISEASES

Bureau chief retires	M/A92
<i>Chlamydia trachomatis</i> annual summary 1991	J/S92
implementation of Gen-Probe	M/A92
Gonorrhea	
annual summary 1991	J/S92
implementation of Gen-Probe	M/A92
HIV/AIDS	
annual summary 1991	J/S92
case definition expanded	O/D92

confidentiality of records	O/D92
consultation rules	O/D92
health care workers	O/D92
hotlines	J/S92
surveillance in Missouri	M/J92
Nongonococcal urethritis	J/S92
Syphilis	
annual summary 1991	J/S92
congenital surveillance	
case definition	J/S92
increase in Missouri	M/A92
outbreak emergency	
declared in Missouri	O/D92
outbreak in St. Louis City	M/A92

STATE PUBLIC HEALTH LABORATORY

Annual report 1991	J/S92
Courier service	O/D92
Laboratory services manual	M/A92
Newborn screening	M/J92

KEY

J/S92	= July/September 1992
J/F92	= January/February 1992
M/A92	= March/April 1992
M/J92	= May/June 1992
O/D92	= October/December 1992



Importance of *Haemophilus influenzae* Vaccine (HbCV) for Child Care Attendees

Marilyn Kemna
Bureau of Immunization

During the 1991 child care immunization survey and audits conducted by the Missouri Department of Health Bureau of Immunization staff, many concerns were expressed by facility operators regarding the importance for protection against *Haemophilus influenzae* b for child care attendees. *Haemophilus influenzae* b (Hib) is a major cause of meningitis, otitis media, epiglottitis, septic arthritis, acute febrile bacteria, cellulitis, pneumonia and empyema in infants and young children (3 months to 4 years of age).

About one in every 200 children in the United States will have a moderate to severe disease caused by Hib before their fifth birthday. Sixty percent of these children develop meningitis, of whom 3-6% die. During 1990, Missouri reported four deaths attributed to Hib disease and Hib meningitis. Twenty to thirty percent of the survivors of meningitis develop permanent sequelae ranging from mild hearing loss to mental retardation. According to national esti-

mates, approximately two-thirds of all cases of Hib disease affect infants and children <15 months of age¹. During the first half of 1991, 51 cases of invasive Hib disease were reported in Missouri, of which 17 (33.3%) were children <12 months of age and 28 (54.9%) were under age four.

H. influenzae organisms are found in the upper respiratory tract of humans. The mode of transmission is presumably person to person, by direct contact or through inhalation of droplets or respiratory tract secretions containing the organism². Frequently, children and adults can carry this bacteria without having symptoms (2-5% of children are colonized with Hib)². Thus, children attending child care facilities have a greater opportunity for exposure to this disease. The CDC's Immunization Practices Advisory Committee (ACIP) considers children attending child care facilities to be at high risk for contracting Hib and consider the vaccine critical to protect children under five years of age.

There are currently three types of Hib conjugate vaccines (HbCV) available:

HbOC, **HibTITER** (manufactured by Lederle-Praxis), PRP-OMP, **PedvaxHIB** (manufactured by Merck, Sharp and Dohme) and PRP-D, **ProHIBIT** (manufactured by Connaught). HibTITER and PedvaxHIB are licensed for use in infants beginning at two months of age in a multiple dose series; ProHIBIT, which is given as a single dose, is recommended for children between 15 and 59 months of age. The ACIP recommends that all children receive one of the conjugate vaccines licensed for infant use (HibTITER or PedvaxHIB). Table 1 provides the ACIP-recommended immunization schedule for these two vaccines.

The Department of Health (DOH) provides HibTITER vaccine to the county health departments for use in immunization clinics for children 2 months of age

Table 1. Recommended immunization schedule for *Haemophilus b* conjugated vaccines

Vaccine	2 months	4 months	6 months	12 months	15 months
HbOC (HibTITER)	dose 1	dose 2	dose 3	---	booster
PRP-OMP (PedvaxHIB)	dose 1	dose 2	---	booster	---

Inside this Issue...

Page	
3	Vaccine Information Pamphlets
4	Lead in School
5	Ice Survey
7	TB Awareness Fortnight
11	<i>E. coli</i> 0157:H7 Reporting
12	<i>Salmonella infantis</i> Outbreak
15	New Cremation Rule
16	Radon in Schools
17	Infection Control in LTCF's
17	Lyme Disease Investigation

to 59 months of age. HbCV is not routinely recommended for children 5 years of age or older. The DOH recommends that the schedule given in Table 1 be followed in administering Hib vaccine. HbCV may be administered simultaneously at separate sites with diphtheria and tetanus toxoids and pertussis vaccine adsorbed (DTP); combined measles, mumps, rubella vaccine (MMR); oral poliovirus vaccine (OPV); or inactivated poliovirus vaccine (IPV).

Ideally, the same conjugate Hib vaccine should be used throughout the immunization series (according to Table 1). No data exist regarding the interchangeability of different conjugate vaccines

with respect to safety, immunogenicity or efficacy. However, in those situations where the vaccine provider does not know which type of Hib conjugate vaccine the child to be vaccinated had previously received, it is prudent for the provider to ensure that, at a minimum, an infant 2 to 6 months of age receive a primary series of three doses of conjugate vaccine. These recommendations may change as data become available regarding the response to different conjugate vaccines in a primary series¹.

Children less than 24 months of age who have had Hib disease should still receive vaccine, since many children of that age

fail to develop adequate immunity following natural disease. The immunization series can be initiated (or continued) at the time of hospital discharge¹.

REFERENCES:

1. CDC. *Haemophilus b* Conjugate Vaccines for Prevention of *Haemophilus influenzae* Type b Disease Among Infants and Children Two Months of Age and Older. MMWR 1991;40[RR-1];1-7.
2. American Academy of Pediatrics. Report of the Committee on Infectious Diseases, Twenty-second Edition, 1991;220-9.

Vaccine-Preventable Disease Among the Preschool Age Population

Marilyn Kemna
Bureau of Immunization

The Missouri Department of Health is becoming increasingly concerned regarding vaccine preventable disease incidence and low immunization levels in the preschool age population. During 1991, the Department of Health's Bureau of Immunization conducted a retrospective survey of randomly selected first grade students in the state to determine their immunization status. Records were analyzed to determine the percentage of students who had completed the primary immunization series by age two [4 Diphtheria-Tetanus-Pertussis (DTP), 3 Oral Polio Vaccine (OPV) and 1 Measles-Mumps-Rubella (MMR)] and were thus considered age-appropriately immunized. Results indicated that only 43% of these children were age-appropriately immunized.

In recent years large outbreaks of measles have been reported nationwide in this age group. In Missouri during 1989, 93 of the 671 cases (14%) were reported in children 5 years of age and younger. Additionally, a total of 39 cases (38% of 103) reported during 1990 involved children in this age group. Seventeen of the

39 cases (44%) were reported in unimmunized or inappropriately immunized children (children are inappropriately immunized if the immunization was administered before the child's first birthday).

Pertussis incidence has increased dramatically over the last several years. The majority of cases reported in Missouri continue to affect the preschool age population. During 1989, 129 of the 141 cases (92%) were reported in children 5 years of age and younger. Of the 116 cases reported during 1990, 104 (90%) involved children in this age group. Likewise, 52 of the 59 cases (88%) reported during the first nine months of 1991 involved children in this age group. Analysis of these reports indicate that 58 cases (56%) reported during 1990 and 33 cases (55%) reported during the first nine months of 1991 involved children who had failed to start or who had started but failed to complete the DTP series.

Reports of *Haemophilus influenzae b* disease in the preschool age population continue to be of concern to health officials. During 1989, 95 of the 106 cases (90%) were reported in Missouri chil-

dren 5 years of age and younger. During 1990, 98 of the 145 cases (68%) reported and 21 of the 48 cases (41%) reported during the first nine months of 1991 involved children in this age group.

Efforts are being made nationwide to improve the immunization level of the preschool age population, particularly those children who are two years of age or younger. The importance of targeting this group is underscored by the fact that:

1. According to the American Academy of Pediatrics and Immunization Practices Advisory Committee (ACIP) immunization schedules, by age two, 90% of the recommended immunizations should have been completed; and
2. The risk of permanent sequelae from infection with a vaccine-preventable disease is greatest for this age group.

In Missouri, preschool children attending child care facilities (day care centers, preschools, nursery schools, and grade school pre-kindergarten programs) are required by section 210.003, RSMo (Cum. Supp. 1991) to be age-appropriately immunized against measles,

mumps, rubella, diphtheria, tetanus, pertussis, polio and *Haemophilus influenzae* b. Protection against these diseases is provided by the following vaccines: MMR (measles, mumps, rubella), DTP (diphtheria, tetanus and pertussis) OPV (polio) and HbCV (*Haemophilus influenzae* b). Table 1, which is an excerpt from the Missouri Department of Health's Immunization Schedule (March 1991), provides scheduling information for these immunizations.

This state statute also requires operators of child care facilities caring for ten or more preschool children to provide to the Department of Health, Bureau of Immunization, an annual report of the immunization status of these children. Reports are due to the bureau by January 15 of each year and require immunization information for DTP, OPV, HbCV (Hib) and MMR.

In addition to evaluating these reports, Bureau of Immunization field staff have

Table 1. Recommended immunization schedule for MMR, DTP, OPV and HbCV

<u>Recommended Age</u>	<u>Vaccines</u>
2 months	DTP #1, OPV #1, HbCV #1*
4 months	DTP #2, OPV #2, HbCV #2*
6 months	DTP #3, HbCV #3*
15 months	DTP #4, OPV #3, MMR #1, HbCV booster*
4-6 years	DTP #5, OPV #4, MMR #2

*The recommended timing schedule differs for the three types of HbCV currently available. The package inserts provide specific timing instructions.

audited the immunization records of attendees in selected child care facilities throughout the state. These audits are conducted as a means of verifying the information obtained during the survey. Staff use this opportunity to educate the operators of the facilities as to the immunization requirements for attendees and to assist them in determining those children in need of additional immunizations.

In addition to the vaccines which are currently recommended in the primary series, CDC officials indicate licensure of a live varicella (chickenpox) vaccine is anticipated in the near future. Additionally, a recommendation for universal vaccine against hepatitis B is expected soon.

See also article on page 1 concerning HbCV.

VIP's (Vaccine Information Pamphlets)

VIP's ... no it is not the U.S. Postal Service answer to the nine digit zip code. VIP's stands for Vaccine Information Pamphlets. The pamphlets entitled, "Measles, Mumps and Rubella," "Diphtheria, Tetanus and Pertussis" and "Oral Polio Vaccine" will replace the important information statements for these vaccines.

The effective date for replacement is April 15, 1992. All physicians who administer the above vaccines will be required to provide these informative pamphlets to their patients. The Bureau of Immunization will provide camera ready copies of these three pamphlets to physicians by mid-March.

These pamphlets have been designed to include supplementary information to define or clarify many of the technical, legal, and medical terms. In addition this information was made more "user friendly," lowering the reading level to that of the average 8th grader.

Pamphlets will be given to vaccine recipients prior to the administration of the vaccine. A great deal of thought and research at the national level went into the development of this program. We need to ensure that the public has as much information as possible about the importance of immunizations. This is the first step.

Lead in School Drinking Water

Richard H. Gnaedinger, PhD
Bureau of Environmental Epidemiology

The subject of lead in school drinking water became a high profile issue several years ago with the concern over the amount of lead in drinking water at the point of use. Along with this concern was the recognition that water can pick up lead after it leaves the water plant or the well. This resulted in the passage of the Lead Contamination Control Act of 1988 (LCCA), Public Law 100-572, enacted on October 31, 1988, which amended the Safe Drinking Water Act of 1974 (SDWA).

The SDWA set a maximum contaminant level of 50 parts per billion (ppb.) for lead in the drinking water as it leaves the water plant or as it is drawn from the well. Most water sources or water producers have met this requirement very easily; in fact, very few have lead levels in excess of 5 ppb. The LCCA called for a more stringent requirement in that it recommended an action level of 20 ppb. at the point of use. Under the act schools were encouraged to test their drinking water outlets for lead and to remediate those that tested above 20 ppb.

In May of 1991, the Environmental Protection Agency (EPA) promulgated the lead and copper rule which set the action level for lead at 15 ppb. Additionally, this rule called for corrosion control at the water plant, which was designed to prevent leaching of lead and copper from plumbing fixtures, thereby reducing the amount of these metals in the water at the point of use. It is not known at this time whether or not the LCCA will be amended to reflect this newer action level of 15 ppb. for lead.

The LCCA was passed initially to specifically address the hazards posed by drinking water coolers in schools and in day care centers, because of the known health effects of lead on children and because certain water coolers were found to introduce lead to the water. Day care

homes were not specifically mentioned in the act, but these homes are just as important as day care centers from the standpoint of exposing children to lead. Outlets other than coolers were not addressed in the LCCA, but they are just as important since most of the lead in drinking water comes from solder joints in the plumbing. In view of this, outlets like ice making machines, fountains, and classroom and kitchen sinks are potentially as hazardous as water coolers.

Under the LCCA of 1988, states were required to develop programs to assist schools and day care centers in identifying potential lead contamination problems and to remediate any such identified problems. In Missouri, the program consisted of sending out information in September 1989 on how to assess their buildings for lead, and on how to get their water tested. Even though testing was not required under the LCCA, it was encouraged, since testing was the only sure way of determining which outlets were at risk.

Another part of Missouri's program under the LCCA requested that the schools and day care centers send to the Bureau of Environmental Epidemiology the results of their assessments, as well as the results of any testing that was done. Survey forms on which to record this data were furnished for their convenience. The response to this request was very good considering that the act did not require response. The results of the survey are as follows:

- 1) Of the 528 public school districts in Missouri, 49.6% sent completed forms to the bureau.
- 2) Of the 528 public school districts in Missouri, 28.5% tested their outlets for lead. Some districts tested all the outlets used for drinking; whereas, others tested only a selected few.
- 3) Of the 664 private and religion affiliated schools, 20.3% responded and 8.4% of the 664 tested for lead. None of the 50 state schools responded.

4) Of the 1,123 day care centers in Missouri at the time of the survey, 25.9% responded, and 7.5% of the total number had tested for lead.

5) Of the schools responding, 94.9% reported having water coolers; whereas, only 31.6% of the responding day care centers had coolers. This difference was not unexpected as most day care centers take water for drinking from the kitchen sink.

The testing results were analyzed by type of outlet and by the amount of lead found in the water with the following results:

- 1) Of the 3,332 coolers tested, only 3.7% tested above the action level of 20 ppb., and 75.4% tested less than 5 ppb.
- 2) Of the 846 non-cooled drinking water fountains, 4.6% were above 20 ppb., and 64.1% were below 5 ppb.
- 3) Classroom and kitchen sinks and ice making machines were lumped together for this summary. Of the 2,597 tested, 7.6% of them were above the action level of 20 ppb. and 61.3% tested less than 5 ppb.
- 4) Of all the outlets that were tested in the schools, 5.7% of them tested above 20 ppb. and in the day care centers 2.4% exceeded this level.
- 5) On further analysis of the testing data, it is seen that 8.3% of the sinks and ice making machines in the public schools tested above 20 ppb.; whereas only 1.6% of the sinks in day care centers exceeded this level.

The survey suggests that the drinking water in schools and day care centers is in most cases safe to drink. However, since most of them have not yet tested their water, there are likely to be some outlets that put the children using them at risk. Most of the schools and day care centers that had outlets exceeding the action level took steps immediately to reduce the hazard. This was the purpose of the LCCA and it was encouraging to see some of the schools and day care centers take advantage of it.

Missouri Ice Survey - 1990

William R. Schmidt
and David Stull

Division of Environmental Health and
Epidemiology
and

Ross Brownson

Division of Chronic Disease Prevention
and Health Promotion

The manufacturing of ice is not routinely regulated in Missouri. To help determine if a public health problem exists, a survey was conducted from August to October 1990 of randomly selected ice products sold to the public. (See Table 1.) Ice samples were collected in each area of the state by sanitarians who were familiar with their re-

spective counties. Ice made from community water supplies and ice made from private or non-community water supplies were obtained from each area. The samples were analyzed by the Missouri State Public Health Laboratory for bacteria, chemical contamination and for extraneous materials.

Table 1. Missouri ice survey results, August-October, 1990

DOH District Office	Number of Ice Samples	Water Supply	Bacteriological Results		Residual Material Results	Chemical Results		
			SPC	Coliform		Pb	Cd	Cu
NW	28	Com - 23 NC - 1 Unk - 4	Unac - 2 Acc - 26	Unac - 1 Acc - 28	Unac - 22 Acc - 6	Acc 23 LA 5	23 5	23 5
NE	32	Com - 22 Private - 1 Unk - 9	Unac - 2 Acc - 30	Unac - 2 Acc - 29 Unk - 1	Unac - 16 Acc - 14 LA - 2	Acc 32 LA	32	32
CEN	31	Com - 22 Private - 3 NC - 3 Unk - 3 Other - 1	Unac - 2 Acc - 29	Unac - 2 Acc - 28 Unk - 1	Unac - 18 Acc - 13	Acc 31 LA	31	31
SE	29	Com - 25 Private - 3 Unk - 1	Unac - 3 Acc - 26	Unac - 0 Acc - 24 Unk - 5	Unac - 14 Acc - 15	Acc 29 LA	29	29
SW	30	Com - 11 Private - 9 NC - 10	Unac - 7 Acc - 23	Unac - 0 Acc - 27 Unk - 3	Unac - 24 Acc - 6	Acc 30 LA	30	30
KC	31	Com - 31	Unac - 0 Acc - 31	Unac - 0 Acc - 31	Unac - 20 Acc - 5 LA - 6	Acc 31 LA	31	31
ED	37	Com - 33 Private - 1 Unk - 3	Unac - 2 Acc - 35	Unac - 8 Acc - 28 Unk - 1	Unac - 33 Acc - 4	Acc 37 LA	37	37
TOTAL	218	Com - 166 Private - 17 NC - 14 Unk - 20 Other - 1	Unac - 18 Acc - 200	Unac - 13 Acc - 194 Unk - 11	Unac - 147 Acc - 63 LA - 8	Acc 213 LA 5	213 5	213 5
SPC - Standard Plate Count Com. - Community NC - Non-Community			Acc - Acceptable Unac - Unacceptable LA - Lab Accident Unk - Unknown			Pb - Lead Cd - Cadmium Cu - Copper		

Bacteriologic Results

The standard plate count (SPC) is a standard lab procedure which determines the density of all bacteria in the ice sample, and is thought to be a good water quality indicator if accompanied by other complementary data. Of the total 218 ice samples taken from all sources and tested for SPC, 8% (18/218) were found at a level exceeding 500/mL. Using the 95% confidence interval, one would expect to find that any subsequent ice samples taken would result in excessive SPC measurements from 5% to 13% of the time. Results comparing SPC by type of water supply showed that 7% (12/166) of the ice samples from community water supplies had a SPC of >500/mL. Using a 95% confidence interval, our results indicate that from 4% to 12% of subsequent supplies would exceed the quality factor used for drinking water.

There were some interesting findings which resulted when comparing SPC >500 mL by district. Twenty-three percent (7/30) of the Southwest (SW) district ice samples exceeded 500/mL. At the 95% confidence interval, it is likely that anywhere from 10% to 42% of any subsequent ice samples from the SW District would exceed the 500/mL standard. However, of the 30 ice samples taken from the SW District, 19 were taken from non-community and private water sources. Those ice sample sources were dramatically different than those from all of the other districts. However, the SPC results from the different types of supplies in the SW District were not very different—25% (3/12) of the community water supply samples, 20% (2/10) of the non community samples, and 22% (2/9) of the private samples exceeded 500/mL—though the small numbers make the comparisons somewhat meaningless.

Coliforms are a group of bacteria that serve as the principle indicator of the suitability of water to be used for human consumption. The Environmental Protection Agency has determined that evi-

dence of any coliform bacteria in drinking water is an indication of contamination. A coliform count in ice could be a water source problem or may indicate a handling problem or dirty equipment. Only one of eleven ice samples from non-community water supplies and none of the fifteen taken from private sources resulted in confirmation of any coliform bacteria. Results also indicated that 10% (16/160) of the ice samples from community water supplies had coliform bacteria present. At the 95% confidence level, it is likely that 6% to 16% of any subsequent ice samples from community water supplies would exceed this coliform count standard.

When comparing those ice samples taken in each district which indicated the presence of coliforms, the Eastern District (ED) surpassed all the other districts combined—31% (11/36) in comparison with 6% (10/171). At the 95% confidence interval, our results indicate that anywhere from 16% to 48% of ice samples taken from the ED would show the presence of coliform bacteria. However, a large percentage of ice samples from the ED were taken from community water supplies—89% (32/36). The ED results showed a large percentage of its community water supplies, 8% (9/32), to have a positive coliform count.

Chemical Results

Results of chemical testing on the samples indicated that the water used to manufacture ice in Missouri did not exceed the standard for lead, cadmium, and copper. Laboratory errors prevented the analysis of nitrate values in all of the samples and prevented the testing of 5 samples from the Northwest (NW) district for any chemical values.

Other Results

Results also indicated that 64% (106/166) of the community water supply ice samples contained extraneous materials, which is the residue left after filtration. At the 95% confidence level, it is likely that from 56% to 71% of any subsequent community water supply ice

samples would contain extraneous materials. Extraneous materials were found in 61% (77/126) of the ice samples taken from convenience stores and 79% (38/48) of those from retail stores.

Discussion

The source of the water used to manufacture ice was considered to be one of the most important variables when determining its potability. A “community water supply” is defined in Missouri as a system for delivery of piped water for human consumption which has at least fifteen service connections or which serves an average of at least 25 individuals at least 60 days a year and operates on a year-round basis. Community water supplies are tested at least monthly per U.S. Environmental Protection Agency (EPA) and Missouri Department of Natural Resources rules for total coliform counts; at least once every three years for ten inorganic compounds, six organic compounds and 42 volatile organic compounds; and once every four years for radionuclides. Of the 218 ice samples collected, 76% (166/218) were taken from a community water supply source. Fifty-three percent (9/17) of the ice samples from non-community sources and 71% (10/14) of the ice samples from private sources were from the SW District. Any subsequent survey should take a much larger percentage of ice samples from sources that are less regulated (non-community) or not regulated at all (private wells) and should randomly sample the various areas of the state. A 1988 Future Farmers of America survey of private water supplies done randomly throughout Missouri showed that only 57% of the 452 samples were satisfactory when analyzed for the presence of coliform bacteria. That same survey showed that 8% of 395 water samples tested for nitrates were unsatisfactory. The unanswered questions are: How much ice in Missouri is manufactured from these non-community water supply or private water supply sources and if a large quantity is taken from these sources, is the water non-potable and thus the public at risk?

Unfortunately, the small number of non-community water supply and private water supply ice samples, 14% (27/187), makes it impossible to predict with any accuracy the SPC, coliform counts or extraneous materials findings of any subsequent ice samples. This is a major shortcoming of this study. It may be that very little of the ice manufactured for commercial sale comes from private or non-community water supplies.

The best indicator of a public health problem that was used in this survey (coliform counts) indicated a problem when community water was used as a source. This was not expected because this type of water source is regulated monthly by the Missouri Department of Natural Resources. It could be that it's a result of a packaging problem.

Ten percent (16/160) of the samples taken from community water supplies had coliform bacteria present. Even more disturbing was that 28% (9/32) of the ED community water supply samples had coliform bacteria present. The reasons for the substantial difference between the ED and the other districts are not apparent and further study is needed.

The large percentage of ice samples from all water sources that contained

extraneous materials, 70% (147/210), indicates that there is a packaging problem in the ice manufacturing process, but it does not necessarily imply that a public health problem exists. It does not appear that the type of establishment influences whether the ice sold to the public normally contains extraneous materials. Results also indicated that the water used to manufacture ice in Missouri did not exceed the EPA standard for lead, copper, and cadmium.

Although no conclusion about the regulation of the ice industry in Missouri can be drawn from this study, the public consumption of this product and public expectations about consumer safety indicate that minimal regulations should be established, i.e. either use of a community water supply which is regularly tested or mandatory testing by a private certified lab when water is used from any private or non-community source.

Recommendations

This survey was designed as a pilot, and despite its limitations, the results point out some areas of concern. The primary recommendation is to identify how much ice manufactured in Missouri is from unregulated water sources, i.e. private or non-community water supplies. Ad-

ditional recommendations include the following measures:

1. Repeat the survey, with a much larger number of ice samples from non-community water supplies and private water sources.
2. Nitrate results should be obtained on all ice samples.
3. A comparison should be made between lab findings on ice from community water supply sources and results of routine testing done per state/federal regulations to see if they are consistent. Any previous lab results from private or non-community water sources should also be compared.
4. Consideration should be given to performing fecal coliform lab testing on those ice samples that exceed the coliform count standards.
5. Consideration should be given to testing for pesticides and farm chemicals in private and non-community water supply ice samples.
6. Funding should be sought to accomplish all of the above.

The authors would like to extend their appreciation to the sanitarians and lab personnel who participated in this survey. Their consultation and staff work were essential.

TB Awareness Fortnight

*Vic Tomlinson, M.P.A.
Bureau of Tuberculosis Control*

The seventh annual Tuberculosis Awareness Fortnight Campaign will be held in Missouri during April and May, 1992. Specifically, the American Lung Association of Eastern Missouri has scheduled its awareness activities from April 12-25. The focal point of this year's activities will be a three-day conference on tuberculosis, asthma and smoking prevention. This conference is scheduled for April 23-25 at the Airport Radisson in St. Louis and the portion on tuberculosis will be held on Thursday, April 23. This all day program includes a variety of workshops on tuberculosis. This year's featured speakers include

John Sbarbaro, M.D., Professor of Medicine at the University of Colorado. He will conduct workshops and serve as the featured speaker for the dinner that will be held in the evening of April 23. In addition, Jeffrey Starke, M.D., a professor from Baylor University School of Medicine in Houston, Texas, is one of the speakers on April 23.

The American Lung Association of Western Missouri has scheduled its awareness activities from April 26-May 9. Its activities will include a workshop on skin testing that will be held on May 1 in Kansas City. This workshop will be led by Joan Schlanker, R.N., a Community Health Nursing Consultant from the

Northwestern District Health Office in Macon. She also serves as Nursing Consultant to the Department of Health's Bureau of Tuberculosis Control. In addition, grand rounds will be conducted on May 8 by John Sbarbaro, M.D., at St. Luke's Hospital in Kansas City and the University of Missouri-K.C. School of Medicine.

For additional information concerning Tuberculosis Awareness Fortnight activities, please contact the Bureau of Tuberculosis Control at (314) 751-6122, American Lung Association of Eastern Missouri at (314) 645-5505, or the American Lung Association of Western Missouri at (816) 842-5242.

Cholera Update

Reprinted from Public Health Network message issued by Centers for Disease Control on September 17, 1991.

On August 26, 1991, a culture-confirmed case of cholera was reported to the Maryland Department of Health and Mental Hygiene. The isolate was identified as *Vibrio cholerae* 01, Ogawa, El Tor, toxigenic and does not resemble the endemic Gulf Coast strains or the strains now being isolated in Latin America. Additional symptomatic cases, all with negative stool cultures but high vibriocidal antibody titers, were identified. None had traveled outside the United States and all consumed a common meal.

An epidemiologic investigation was conducted and suggests that the likely food vehicle was frozen fresh coconut milk used as a topping over a Thai rice

pudding. Thorough cooking of frozen coconut milk will kill *V. cholerae*. However, the product in this case was heated "to boiling" and then held at room temperature for five hours before consumption.

The brand of the fresh frozen coconut milk that may have been the vehicle is Asian Best, exported by Jack Hong Company, Limited, of Bangkok, Thailand to a distributor in Maryland. *V. cholerae* non-01, *V. fluvialis*, and *E. coli* MPN of ≥ 1100 /gram have been identified in samples of the product. Further testing is underway at the Food and Drug Administration and the Centers for Disease Control.

The shipment of interest of this product was 25 cases each containing eighty 8 oz. bags, imported on July 19, and distributed to Asian specialty markets in

Illinois, Maryland, Massachusetts, Pennsylvania, Rhode Island, Virginia, and Wisconsin. Client accounts have been advised to withhold any remaining products from sale until further notice.

V. cholerae is a fragile organism that does not survive dehydration or heat processing. Therefore, dried products such as spices and cooked or canned foods are considered safe.

As a result of this report, persons with suspected cholera should be questioned regarding consumption of frozen imported products from southeast Asia, especially frozen coconut milk in addition to other exposures.

Please report all suspect and confirmed cases of cholera to your local health department or the Missouri Department of Health at (800) 392-0272.

Multi-State Outbreak of Ciguatera Poisoning Linked to Florida Amberjack

Reprinted with permission from the Florida Epi-Gram, September, 1991, Vol. 12, No. 5

In mid-August, 1991, a shipment of a type of fish called amberjack from Key West was implicated in 11 cases of ciguatera poisoning in Apalachicola, Florida, as well as 10 cases in Alabama: 6 in Birmingham and 4 in Huntsville. All that remained of the 1200 pounds of suspect amberjack was recovered and initial testing of the fish was positive for ciguatoxin.

Human ciguatera poisoning can occur after consumption of a wide variety of coral reef fish, such as barracuda, grou-

per, red snapper, and amberjack. Contamination of fish occurs sporadically and there is no routine testing of fish to detect the fat-soluble ciguatoxin. Since the toxin is also heat-stable, cooking does not make the fish safe to eat. Symptoms of acute poisoning begin in 30 minutes to four hours after ingestion and include numbness and tingling of the face and lips that spreads to fingers and toes. This is followed by nausea and vomiting, diarrhea, malaise, dizziness, abdominal pain, and muscular weakness. In severe poisoning, the symptoms may progress to muscular paralysis, dyspnea, and convulsions. Death may occur from convulsions or respira-

tory arrest within one to twenty-four hours. If the patient recovers from the immediate symptoms, muscular weakness or paresthesias may persist for many weeks and may be aggravated by ingestion of fish, oils, or alcohol. Paresthesias characteristically consist of reversed temperature sensations. Laboratory findings are not contributory in making the diagnosis.

Although no specific therapy is available, early treatment with mannitol may promote excretion of ciguatoxin. Prompt reporting of suspected cases of ciguatera poisoning is essential to identify and recall all implicated fish.

We did not publish a *Missouri Epidemiologist* for November-December 1991. The data tables which would normally have appeared in that issue are appearing in this current issue.

Bimonthly Morbidity Report, September/October 1991

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Bimonthly Morbidity Summary, September/October 1991

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

1991 Index to *Missouri Epidemiologist*

ARTHROPODS

Ehrlichiosis	
annual summary 1990	M/J91
Lyme disease update 1990	M/A91
Rocky Mountain spotted fever	
annual summary 1990	M/J91
Ticks	
disease summary 1990	M/J91
use of repellents	J/F91
Tularemia	
annual summary 1990	M/J91

CHILD SAFETY

Teaching children	
handwashing	J/F91

CHOLERA

General information	J/A91
Isolation in U.S. gulf coast	J/A91

COMMUNICABLE DISEASE

SUMMARIES

Annual report 1990	M/A91, S/O91
Infectious diseases	
from the Persian Gulf	M/J91
Outbreaks	
summary 1990	S/O91
summary first	
quarter 1991	M/A91

DIARRHEAL ILLNESS

Associated with blue-green	
algae	M/J91
Campylobacter	S/O91
Hepatitis A outbreak in	
a restaurant	M/A91
<i>Salmonella enteritidis</i>	
risk of infection	M/J91
Yersinia	S/O91

ENVIRONMENTAL

Blue-green algae	M/J91
Bureau of Environmental	
Epidemiology report 1991	S/O91
Clenbuterol	M/A91
Dioxin hotline	J/A91
Fingerstick device- FDA	
safety alert for spring-	
loaded device	M/A91
Heat alert policy	M/J91
Heat related illness	M/J91
Lead--new perspectives	J/F91

Nitrates

occurrence in Missouri	J/F91
Pesticides	J/F91
Radon hotline	J/A91

FOODBORNE ILLNESS

Campylobacter	S/O91
Hepatitis A outbreak in	
a restaurant	M/A91
Precautions for outings	M/J91
<i>Salmonella enteritidis</i>	
risk of infection	M/J91

HEPATITIS

Hepatitis A	
availability of immune	
globulin	M/A91
outbreak in a restaurant	M/A91
Hepatitis B transmission	
to patients	J/A91
Hepatitis C prevention	M/A91

HOTLINES

AIDS hotline	J/A91
Communicable disease	J/A91
Dioxin hotline	J/A91
Radon	J/A91

IMMUNIZATION/VACCINE PREVENTABLE DISEASE

Contraindications	M/A91
<i>Haemophilus influenzae</i>	
annual summary 1990	S/O91
vaccine recommendations	J/F91
Influenza/pneumonia	
summary 1990-91 season	J/A91
update 1990-91 season	J/F91
Measles	
annual summary 1990	S/O91
two-dose measles vaccine	
requirement	J/F91
Mumps	
annual summary 1990	S/O91
Pertussis	
annual summary 1990	S/O91
Polio optional third dose	J/A91
Rubella	S/O91

MINORITY HEALTH

Tuberculosis	S/O91
Yersinia	S/O91

MYCOBACTERIA/ TUBERCULOSIS

Drugs for mycobacteria	M/J91
Tuberculosis	
acquired from Persian Gulf	M/J91
annual summary	S/O91
awareness	J/F91
outbreak in elementary	
school	J/A91
reporting infections	J/F91, J/A91

OFFICE OF EPIDEMIOLOGY

Epidemic Intelligence	
Service officer assignment	J/A91
Office of Epidemiology created	J/A91

RABIES

Annual summary 1990	S/O91
---------------------	-------

SEXUALLY TRANSMITTED DISEASES

<i>Chlamydia trachomatis</i>	S/O91
Gonorrhea	S/O91

HIV/AIDS

annual report 1990	S/O91
HIV/HBV transmission	
guidelines	J/A91
Hotlines	J/A91
Knowledge, attitude, belief	
and behavior	J/A91
Level II intervention	M/A91
Statistics	M/A91
Nongonococcal Urethritis	S/O91
Syphilis	
annual summary 1990	S/O91

STATE PUBLIC HEALTH LABORATORY

Annual report 1990	S/O91
--------------------	-------

KEY

J/A91 = July/August 1991
J/F91 = January/February 1991
M/A91 = March/April 1991
M/J91 = May/June 1991
S/O91 = September/October 1991

Missouri Department of Health

Bureau of Communicable Disease Control

C. Jon Hinkle
Northwestern District Health Office
Communicable Disease Coordinator
219 North Chestnut, Box 230
Cameron, MO 64429
816/632-2107

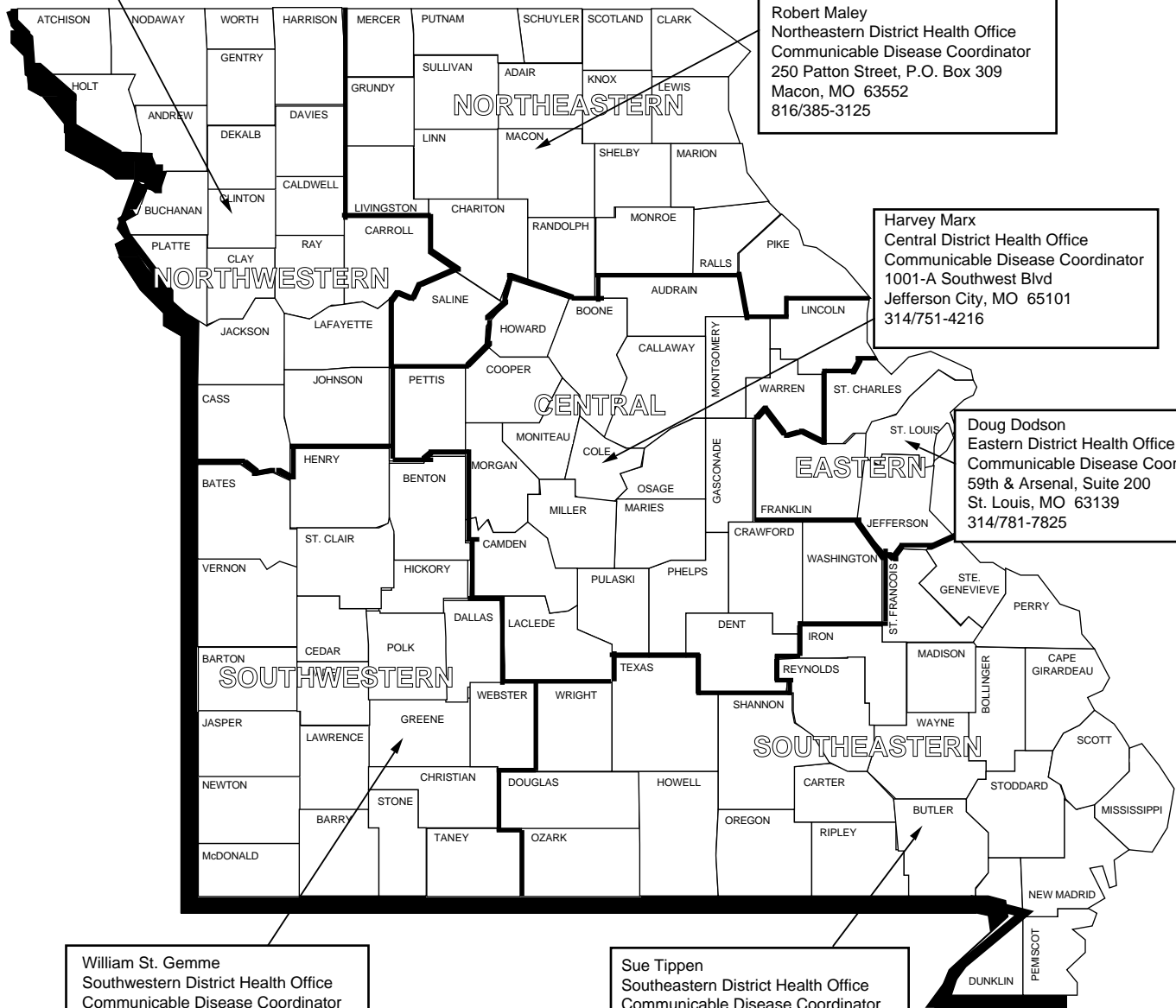
Robert Maley
Northeastern District Health Office
Communicable Disease Coordinator
250 Patton Street, P.O. Box 309
Macon, MO 63552
816/385-3125

Harvey Marx
Central District Health Office
Communicable Disease Coordinator
1001-A Southwest Blvd
Jefferson City, MO 65101
314/751-4216

Doug Dodson
Eastern District Health Office
Communicable Disease Coordinator
59th & Arsenal, Suite 200
St. Louis, MO 63139
314/781-7825

William St. Gemme
Southwestern District Health Office
Communicable Disease Coordinator
1150 East Latoka, P.O. Box 777
Springfield, MO 65801
417/888-4000

Sue Tippen
Southeastern District Health Office
Communicable Disease Coordinator
2875 James Blvd
Poplar Bluff MO 63901
314/785-9634



This map depicts the division of counties into Department of Health districts and gives the names of the Communicable Disease Coordinators. Feel free to contact your district office regarding public health concerns.

E. Coli O157:H7 Reporting in Missouri

Michael Fobbs

Bureau of Communicable Disease Control

E. coli O157:H7 is a bacterium responsible for gastrointestinal illness with bloody diarrhea as a common symptom. Hemolytic uremic syndrome (HUS) is a highly serious complication of infection with *E. coli* O157:H7. Treatment of HUS requires an average of 15 days of hospitalization and half the cases require renal dialysis using the artificial kidney for an average of 12 days. Death occurred in 3.4% of cases in patients studied in Minnesota¹. *E. coli* causes significant illness in Missouri, despite our lack of knowledge about the number of cases that occur each year.

Our understanding of the epidemiology of *E. coli* O157:H7 is constantly being updated. New information about sources of infection and new concerns about identifying the potential for morbidity and mortality in day care or convalescent facilities make reporting in Missouri a necessity. For these reasons, a Proposed Amendment to make *E. coli* O157:H7 reportable in Missouri was filed with the Secretary of State on January 31, 1992. This Proposed Amendment is expected to become effective sometime in June 1992. Currently *E. coli* O157:H7 is reportable in Washington and Minnesota.

A waterborne outbreak occurred in Cabool, Missouri, in December 1989. The outbreak involved 240 cases, 34 hospitalizations and three deaths, and drew personnel from the Texas County Health Department, the Southeastern District Office, the Division of Environmental Health and Epidemiology, the Environmental Protection Agency, Federal Drug Administration and the Enteric Branch of the Centers for Disease Control. The bacteria isolated from 21 stool specimens were resistant to sulfisoxazole, tetracycline, and streptomycin. It was the largest waterborne outbreak of *E. coli* O157:H7 known.

During the spring and summer of 1991, the Department of Health learned of 16 cases of *E. coli* O157:H7 infection in the St. Louis metropolitan area. Eleven cases occurred from February 28 to May 10 in the St. Louis metro area. No restaurant exposures or other common gatherings were identified. Eight of the specimens were sent to CDC for toxin testing. They were all positive for shiga-like toxins I and II, and verocytotoxins I and II. In June, a second cluster of five cases with onset from May 31 to June 8 was reported. No common exposure was identified for these cases.

All five cases were in the city of St. Charles and the surrounding area. Three of the cases in this cluster developed HUS and one, a 15-month-old child, died.

REFERENCE

1. Martin DL, MacDonald KL, White, KE, Soler, JT, Osterholm, MT. The epidemiology and clinical aspects of the hemolytic uremic syndrome in Minnesota. *N Engl J Med* 1990; 323:1161-7.

Hepatitis A Trends in Missouri 1991

Michael Fobbs

Bureau of Communicable Disease Control

Preliminary data for 1991 reflect changes in the geographic distribution of hepatitis A in the state of Missouri. Since 1987, the highest hepatitis A case rates have occurred in the Northwestern district (NW) with as much as 77.7% of all cases located in that region. The rate has decreased in the Northwestern district from a high of 58.7 cases per 100,000 population in 1988 to 20.2 cases per 100,000 in 1991. This decrease led to a reduction in the number of cases for the state from 1988 through 1990.

In 1991, despite a December 1990/January 1991 outbreak of hepatitis A in Belton, the Northwestern district saw a reduction in rates of hepatitis A compared with previous years. Missouri as a whole has seen the number of cases increase, with 619 reported for 1990 and a preliminary total of 651 for 1991. Higher rates of infection are being reported in the Central (CD) and Eastern (ED) districts. The largest increase occurred in the Southeastern district (SE), which had the highest rate in the state. (See Figure 1).

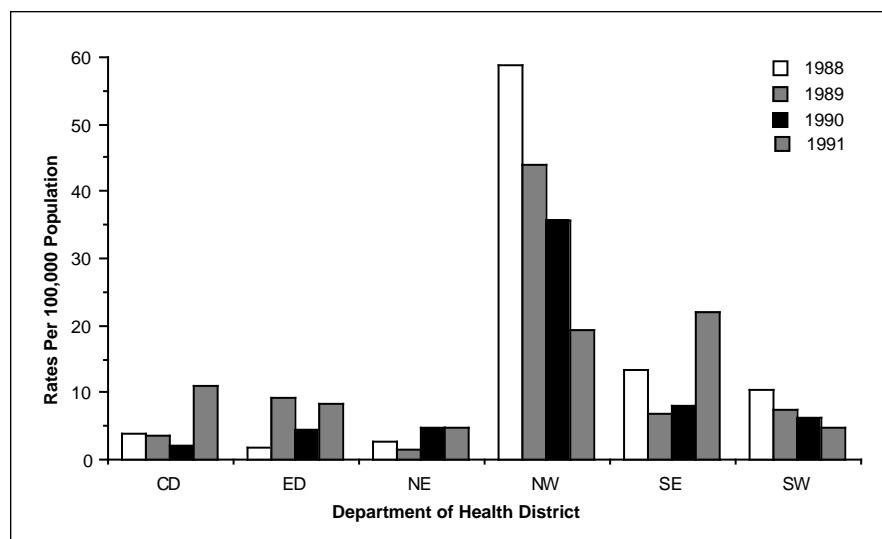


Figure 1. Hepatitis A rates by district, Missouri, 1988-1991. Data for 1991 is still preliminary.

Outbreak of *Salmonella infantis* Associated with a Wedding

Introduction

On June 20, 1991, the Central District Health Office was notified of a possible outbreak of foodborne illness associated with a wedding which had been held on Saturday, June 1, 1991, in Moniteau County. The initial report included the following information:

Five persons with recent onset of apparent gastro-intestinal illness and stool cultures positive for *Salmonella infantis* had reported attending the wedding. No cases of *Salmonella infantis* had been reported in the Central District in 1991 prior to this outbreak. While there were three meals associated with the wedding celebration, most of the persons had attended the reception but not the other two events. The wedding reception had been catered by a local firm which is operated out of a home with a separate kitchen devoted to the business. It is estimated that 300 persons attended the wedding reception, which was held at a convention center.

An investigative team consisting of members from the Bureau of Communicable Disease Control, the Department of Health Central District Office, and the Moniteau County Health Department was established. Because of the apparent relationship to the wedding reception, the investigation focused on the reception dinner of June 1, 1991.

Methods

The investigation included interviews with well and ill guests of the wedding reception, asking for food histories, signs and symptoms, and other pertinent data; computer analysis of data from completed questionnaires using Epi Info version 5; inspection of the catering operation and convention center facilities where the suspect meal was served; evaluation of the product suppliers; interviews with the caterer; review of menus served by the caterer to wedding

guests; collection of water samples from the caterer's home for analysis; and collection of stool specimens from ill guests for analysis. No food was available for sampling.

An outbreak-related case was defined as a person who developed diarrhea after consuming food from the wedding reception on June 1, 1991. A case-control study was conducted. Well guests identified during interviews with wedding attendees served as the controls. Fifty-one persons were interviewed, all of whom ate at the reception.

Results

Twenty-five (25) of those interviewed were ill. Three persons reported as ill were interviewed but did not meet the case definition so were excluded from the analysis. A total of 23 well guests served as the controls. The common signs and symptoms were diarrhea (100%), cramps (84%), nausea (52%), fever (52%), chills (44%), and headache (36%). The mean incubation period was 23 hours and the range was 6 to 63 hours for the 24 cases who reported a time of onset.

Single table analyses were performed for each menu item served at the wedding reception. Statistically significant relationships were found between illness and the consumption of turkey (OR = 5.45, 95% CI 1.19 - 26.99, $p = 0.01$) and potato salad (OR = 5.20, 95% CI 1.22 - 23.52, $p = 0.009$).

The inspection and evaluation of the caterer's facility on July 10 revealed the foodhandling equipment, including utensils, cooling unit, hot holding and transport coolers, to be in good working order. However, the operation did not have a three vat sink which is recommended for proper dish washing and sanitization. The reception menu consisted of turkey, ham, roast beef, potato

salad, pasta salad, raw vegetables and dip, raw fruit and sauce, chips, bread, condiments, a variety of cakes, iced tea, soda and beer. All of the foods served at the wedding reception were intended to be served cold.

The caterer received uncooked boneless turkey breasts at approximately 10:00 p.m. on Wednesday, May 29, delivered frozen by the bride's family. There were six turkey breasts, each individually vacuum packaged and weighing approximately eight pounds. The caterer reported immediately placing the breasts in a tub of water, but could not recall whether the tub containing the turkey was then placed in refrigeration or left on the counter at room temperature to thaw. The thawed breasts were cooked in the original vacuum packaging in an electric roaster oven on Thursday afternoon, May 30, to a temperature of 170°F. A meat thermometer was used to check cooking temperature. They were then cooled at room temperature for 1 1/2 to 2 hours, and placed in refrigeration. No temperature was recorded for the cooled turkey. The meat was sliced at the catering establishment using a commercial meat slicer on Friday afternoon, May 31. Old food debris was found on the slicer on the day of inspection.

The potato salad was prepared on Thursday, May 30, at the catering operation and contained the following ingredients: potatoes, commercial salad dressing, mustard, commercial pickle relish, celery, sugar, salt and pepper.

A sample of the water supply was obtained from the catering establishment and analyzed. Using standard methods for analysis, the water was determined to be unsatisfactory, containing coliform bacteria too-numerous-to-count. The inspection of the catering establishment noted that the well which supplies the water was located within 50 feet of a hog lot.

The convention center in which the reception was held was inspected and revealed the kitchen area to be adequately equipped and clean. However, the tables used for serving the food had no "cold holding" capability and were not equipped with protective sneeze shields. It could not be determined how long the food remained at room temperature on the serving tables.

Ten stool specimens from outbreak-related cases were ultimately confirmed positive for *Salmonella infantis*. The earliest specimen was collected on June 4, 1991 and the final specimen was collected on July 2, 1991. No other enteric pathogens were isolated from the cases. The caterer reported no symptoms and was not screened for enteric pathogens.

Discussion

Salmonellosis is a bacterial disease manifested by acute enterocolitis with sudden onset of abdominal pain, diarrhea, headache, nausea, fever and sometimes vomiting. The incubation period ranges from 6 to 72 hours but is usually 12-36 hours. Fecal excretion usually persists for several days or weeks beyond the acute phase and administration of antibiotics may increase the duration of excretion. *S. infantis* has been found in chicken, turkey, bovine, and porcine populations. Fecal contamination of public water supplies has caused some outbreaks of salmonellosis.

Although no food remained for testing at the time of the investigation, statistical analysis indicated an association between illness and eating turkey or potato salad. Salmonella infections have been previously associated with poultry products. If salmonella organisms were present and if the turkey was thawed at room temperature, the organisms could have multiplied. It is also possible that there may have been cross-contamination between turkey and potato salad, as both foods were prepared on the same day. Finally, the turkey and the potato salad were both prepared using an unsafe water supply.

Recommendations

1. Proper food handling techniques and procedures were reviewed with the caterer. Continued use of these procedures is recommended.
2. Superchlorination of the well was recommended. However, a follow-

up water sample taken on September 27, 1991 was again found to be unsatisfactory containing 1 coliform/100ml water. It was recommended that the caterer discontinue use of this water source until it could be determined to be safe.

Authorization for Cremation

The Department of Health has officially filed with the Secretary of State's Office a rule regarding authorization for cremation. This rule, 19 CSR 30-10.100, clarifies section 193.175, RSMo (1986) which authorizes cremation of a dead human body. There was misunderstanding as to the intent of section 193.175,

RSMo (1986) and the Department of Health felt that this rule would clarify that intent. This rule became effective January 13, 1992. As cremation is an irreversible process, these procedures, if not already in place, should be implemented immediately. We have reprinted the proposed rule below.

19 CSR 30-10.100 Authorization for Cremation

PURPOSE: This rule establishes procedures required prior to cremation of a dead human body.

(1) If the cause of death can be established within seventy-two (72) hours after death, a completed death certificate certifying the cause of death as determined by the medical examiner/coroner or physician shall be delivered or mailed to the local registrar of the county where the death occurred before a body is cremated.

(2) If a completed death certificate cannot be filed because the cause of death has not been determined, the medical examiner/coroner or physician certifying the cause of death shall give the funeral director notice of the reason for the delay. A body shall not be cremated until written authorization by the medical examiner/coroner or physician is received by the funeral director. This authorization shall be a signed statement which identifies the deceased and authorizes final disposition by cremation.

(3) Management of a crematory shall require from an authorized funeral home representative presenting a body for cremation a signed statement which identifies the deceased and which states—

(A) That a completed death certificate has been filed with the local registrar where the death occurred; or

(B) That the funeral director has received a written authorization to cremate the body from the medical examiner/coroner or physician who will be certifying the cause of death.

Auth: sections 193.145, RSMo (Cum. Supp. 1991) and 193.175, RSMo (1986). Original rule filed July 15, 1991, effective January 13, 1992.

This rule is from the Code of State Regulations © 1988 supplement dated January 3, 1992. This rule is reprinted by permission of the Secretary of State.

Upcoming Conference

Region VII Cardiovascular Risk Reduction Conference Partnerships for Prevention

May 12-14, 1992

Kansas ExpoCenter, Topeka, Kansas

Purpose

The conference will provide an update for health professionals about cardiovascular risk reduction and will present strategies for utilizing public and private partnerships in implementing risk reduction programs.

Continuing Education Units

- awarded for nursing by the Kansas State Board of Nursing (14 hours)
- requested for dietitians in Kansas and Iowa
- requested for Certified Health Education Specialists
- requested from the American Home Economics Association

Sponsors

National Heart, Lung, and Blood Institute
Health Departments: Missouri, Iowa, Nebraska
Kansas Public Health Association
Kansas Department of Health and Environment
Kansas LEAN (Low-fat Eating for America Now)
American Heart Association, Kansas Affiliate

Registration

For more information on the conference, or to receive a conference registration packet, call Sue Dabney, Missouri Department of Health, Ph: (314) 876-3200

Radon in Schools

Kenneth Miller
Bureau of Radiological Health

Radon, a naturally occurring radioactive gas, is present in varying amounts throughout the earth's surface. Its accumulation in buildings depends on its prevalence in the area, which is determined by geology, by building construction, ventilation and use. Radon concentrations fluctuate with changes in barometric pressure, temperature, humidity, and perhaps other factors.

The U.S. Environmental Protection Agency has identified prolonged exposure to radon as a leading contributor to the incidence of lung cancer, second only to smoking. Despite the potential for significant impact on health, there are no regulatory limits or testing mandates on radon in schools. The Environmental Protection Agency suggests that radon concentrations in occupied areas

indoors should not exceed 4.0 picocuries/liter (pCi/l), but does not require testing.

Statewide radon screening measurements in private homes by the Bureau of Radiological Health identified 11 counties in Missouri where it is most likely that average radon concentrations in homes could exceed 4.0 pCi/l. All 52 of the public elementary schools in those counties were contacted to determine interest in participating in voluntary radon screening measurements. Twenty-two schools in ten counties agreed to participate. The Bureau of Radiological Health measured radon concentrations in all classrooms and other occupied areas in those schools, a total of 396 rooms, between January 11 and April 1, 1991.

Radon concentrations greater than 4.0 pCi/l were measured in a total of 52 rooms in seven schools. The highest

measurement was 13.3 pCi/l, a level at which additional testing is recommended, but immediate remedial action is not required. Diagnostic procedures were not performed during initial testing and no radon entry points were identified.

Long-term measuring devices were placed this school year to determine average radon concentrations. Results from this screening are still being tabulated and analyzed. Further consultation will be provided if elevated levels of radon are confirmed. School officials will be referred to mitigators, who are listed in the most recent edition of "The National Radon Contractor Proficiency (RCP) Program" prepared by the U.S. Environmental Protection Agency and available from the Bureau of Radiological Health, for any necessary remedial action.

Guidelines for Infection Control in Long Term Care Facilities

Caryl Collier

Nosocomial Infection Control Program

From March 1 to September 17, 1991, four meetings were held by a statewide committee whose primary objective was to develop a consensus on the prevention and management of methicillin resistant *Staphylococcus aureus* (MRSA) in long term care facilities (LTCF's). The committee had representation from the long term care industry, Missouri Division of Aging, four Missouri chapters of the Association for Practitioners in Infection Control, Missouri Hospital Association, University of Missouri Hospital and Clinics, infectious disease specialists and the Missouri Department of Health (State Health Laboratory, Office of Epidemiology, and Bureau of Communicable Disease Control). Al-

though much misunderstanding exists in both hospitals and LTCF's regarding MRSA colonization and control of MRSA infections, it was the consensus of the committee that MRSA is only one of many multiply resistant organisms that must be addressed. Consequently, the committee has developed a document that can be used as a guide for overall infection control in LTCF's. Caryl Collier, nurse epidemiologist, and Dr. Denny Donnell, state epidemiologist, are coordinating the project and edited the document.

The document has the following sections: definitions of infection; body substance precautions; recognition and management of outbreaks, including *Staph. aureus*/MRSA decolonization; transfer agreements between facilities;

and answers to questions commonly asked regarding MRSA, *Clostridium difficile* and tuberculosis. Following approval by all committee members, the final draft will be distributed to health care facilities and professionals through several professional and industry organizations as well as government agencies. The projected timetable for this distribution is April 1992. With the combination of guideline distribution and educational efforts, the committee is hopeful that a more standardized approach to infection control in LTCF's will be implemented statewide, eventually reducing the incidence of infections and infectious disease outbreaks. For more information or to be placed on the mailing list to receive these guidelines, please call the Bureau of Communicable Disease Control at 314/751-6115.

Lyme Disease Investigation in Southeast Missouri

Michael Fobbs

Bureau of Communicable Disease Control

On June 18, 1991, Dr. Denny Donnell, Missouri State Epidemiologist, requested assistance from the Centers for Disease Control to determine if the increasing number of cases of Lyme disease reported in Missouri represented infections with *Borellia burgdorferi*. Cases that met the Centers for Disease Control national surveillance case definition increased from 5 in 1988 to 205 in 1990.

An epidemiological investigation team traveled to Cape Girardeau, Missouri, on July 7 to conduct several entomological and epidemiological studies. The team consisted of personnel from the Department of Health Office of Epidemiology, the Bureau of Communicable Disease Control, the Southeastern District Health Office and three investigators from the Centers for Disease Control, Division of Vector-Borne Infectious Diseases. The goals were to deter-

mine whether *B. burgdorferi* could be identified in ticks appearing in Missouri, to describe better the erythema migrans (EM) rashes occurring here, and to identify risk factors for their development.

The investigations were strongly supported by individuals in the Cape Girardeau Health Department and the Family Physicians Group in Cape Girardeau.

A case-control study was done as well as a physician survey and entomological studies involving the systematic collection of ticks from reported patient tick exposure sites. The case definition for the various studies was: a physician-observed EM rash greater than 5cm in diameter in a Missouri resident with onset between May 1, 1990 and July 7, 1991.

The case control study identified 60 patients who met the case definition and whose EM was diagnosed within sixty

days of onset of illness. Patients diagnosed by other means or reported more than sixty days after onset of illness were excluded from the study. Controls were chosen using a random digit dialing method based on the telephone exchange of the case. Cases and controls were asked to answer questions from identical questionnaires. Questions about outdoor activities, residence and tick avoidance precautions were asked of cases for the one month prior to onset. The same questions were asked of controls for a comparable time period.

The physician survey consisted of interviewing physicians in Southeast Missouri practicing dermatology, rheumatology, cardiology, neurology and primary care physicians. They were requested to report any cases of EM-like rash, inflammatory arthritis, meningitis, Bell's palsy, heart block or other symptoms that could be attributed to Lyme disease. A prospective culture study where physicians were provided with BSKII medium and encouraged to sub-

mit appropriate clinical specimens from suspected Lyme disease cases was also started.

Tick collections were done at exposure sites of patients meeting the project case definition. Over 3,300 ticks were collected during the project. These ticks are being tested primarily for infection with *B. burgdorferi* but will also be tested for tularemia, ehrlichiosis, Rocky Mountain spotted fever and other pathogens. Test methods include ELISA, Indirect Fluorescent Antibody, culture methods, and polymerase chain reaction.

Physicians anywhere in Missouri wishing to help with culture studies may contact their district Communicable Disease Coordinator through the local health department or Department of Health district office, or call the Bureau of Communicable Disease Control at (800) 392-0272. The CD Coordinator will supply Lyme disease reporting forms and culture media. Cultures will be sent to CDC for testing. See page 12 of this newsletter to determine the CD Coordinator responsible for your county.

Results of the above studies will be reported in a future issue of the *Missouri Epidemiologist*.

EDITORIAL NOTE:

The CDC laboratory at Ft. Collins, Colorado has isolated an as yet unidentified type of spirochete from the *Amblyomma americanum* ticks collected in this study in Southeast Missouri which appears to be different from *Borrelia burgdorferi*. The spirochete has been difficult to maintain in culture in the laboratory and efforts to characterize it are in progress.

This work follows the visual recognition of spirochetes by Dr. Dorothy Feir of St. Louis University in which she accomplished passage through a rabbit but was unable to maintain a culture in vitro. A hospital laboratory in Cape Girardeau, Missouri, has also observed spirochetes and has been attempting to culture them.

This work remains to be confirmed, but it is possible that cases seen in southeastern Missouri which meet the CDC definition of Lyme disease may be due to spirochetes other than *Borrelia burgdorferi*. Further inves-

tigation is needed to characterize more fully the spectrum of illness which occurs. It would be wise to call this Lyme-like illness rather than Lyme disease until more information emerges.

It may be that more than one tick-borne organism will eventually be recognized as causing a spectrum of Lyme-like illness with some variations. The initial results of the case-control study in Missouri suggest that erythema migrans occurs but is less often followed by multiple skin lesions than occurs with Lyme disease. Another important difference is that clinicians have reported fewer late manifestations following these rashes.

Until this matter has been more fully studied, physicians in Missouri should be aware that tick bite related erythema migrans does occur with the *Amblyomma americanum* tick, which is widespread in Missouri. The cause of this rash remains under investigation.

Update: Self-Induced Malaria Associated with Malariotherapy for Lyme Disease — Texas

Reprinted with revisions from MMWR October 4, 1991, Vol. 4, No. 39

In December 1990, the Texas Department of Health (TDH) was contacted by a man who had recently moved from the northeastern U.S. and who was considering malariotherapy for Lyme disease (LD). He described a two-year history of unsuccessful treatment with multiple antibiotics for arthralgias and palpitations, which had been diagnosed as LD.

TDH personnel discouraged the man from attempting malariotherapy, emphasizing previously published warnings¹. Despite these warnings, he obtained blood infected with *Plasmodium vivax*

from an unknown source in the northeastern U.S. and injected himself intravenously with the infected blood on December 20 and 23; he experienced his first febrile episode on December 25. Thick and thin smears of the patient's blood, obtained by TDH on January 4, 1991, revealed *P. vivax*. The patient reported that he subsequently experienced approximately 10 paroxysms of fever up to 104.9° F (40.5° C) lasting 12 hours. The patient refused all attempts at medical intervention and treated himself during January 13-16 with chloroquine. No malaria parasites were detected in the patient's blood when tested on January 22.

The patient reported that the infected blood had been tested at the source for human immunodeficiency virus, syphilis, and hepatitis B virus. TDH obtained the remainder of the infected blood for testing and detected numerous *P. vivax* parasites.

Reported by: J Rawlings, MPH, JN Perdue, D Perrotta, PhD, D Simpson, MD, State Epidemiologist, Texas Dept of Health. Bacterial Zoonoses Br, Div of Vector-Borne Infectious Diseases, and Malaria Br, Div of Parasitic Diseases, National Center for Infectious Diseases; Div of Field Epidemiology, Epidemiology Program Office, CDC.

MMWR Editorial Note: The findings of the TDH investigation suggest a serious new problem associated with the use of malariotherapy for treatment of LD—the uncontrolled interstate shipment of infectious blood in the United States. The infected blood was possibly mailed from the northeastern U.S. to Texas and was administered in the U.S. rather than, as in a previously reported episode, in Mexico¹.

The practice of malariotherapy for treating LD has been emphatically discouraged because there have been no controlled, well-designed studies showing that this approach is effective¹ and because of the severe morbidity associated with malaria infection. In addition, this practice poses a risk for coinfection with other bloodborne pathogens and for transfusion reactions. There also may be a small risk for local transmission of malaria in communities in which persons with parasitemia reside. Finally, the unauthorized interstate transport of etiologic agents and of blood and blood products for human use is a violation of federal regulations.

Malariotherapy for LD is experimental and should be studied only with stringent safeguards in place, as outlined in the Declaration of Helsinki². In the U.S., human experiments involving new treatments routinely require approval by the Food and Drug Administration, approval by an institutional review board for the protection of human subjects, and informed patient consent.

Physicians in Missouri and throughout the U.S. should be alert for cases of self-induced or iatrogenic malaria and are encouraged to promptly report such cases to the Missouri Department of Health, (314) 751-6113 or (800) 392-0272.

REFERENCES

1. CDC. Imported malaria associated with malariotherapy of Lyme disease—New Jersey. MMWR 1990; 39:873-5.
2. Page IH. Experiments on people (Commentary). JAMA 1975;232: 257-8.

State Public Health Laboratory Report

Newborn Screening — Hypothyroidism, Phenylketonuria, Galactosemia and Hemoglobinopathies

James Baumgartner, BS, MBA, Chief, Metabolic Disease Unit

	Sept 91	Oct 91	Total YTD
Specimens Tested	9,743	10,381	98,430
Initial (percent)	69.2%	62.3%	68,503
Repeat (percent)	30.8%	37.7%	29,927
Specimens: Unsatisfactory	124	95	1,209
HT Borderline	390	679	3,566
HT Presumptive	17	10	97
PKU Borderline	7	4	145
PKU Presumptive Positive	2	2	9
GAL Borderline	51	30	851
GAL Presumptive Positive	1	2	42
FAS (Sickle cell trait)	90	84	1,024
FAC (Hb C trait)	27	18	257
FAX (Hb variant)	21	0	145
FS (Sickle cell disease)	1	1	17
FSC (Sickle C disease)	1	0	10
FC (Hb C disease)	2	0	6
	Nov 91	Dec 91	Total YTD
Specimens Tested	8,612	10,141	117,183
Initial (percent)	69.1%	69.4%	81,495
Repeat (percent)	30.9%	30.6%	35,688
Specimens: Unsatisfactory	78	112	1,399
HT Borderline	366	385	4,317
HT Presumptive	15	8	120
PKU Borderline	3	5	153
PKU Presumptive Positive	0	1	10
GAL Borderline	29	22	902
GAL Presumptive Positive	2	1	45
FAS (Sickle cell trait)	78	95	1,197
FAC (Hb C trait)	26	27	310
FAX (Hb variant)	11	15	171
FS (Sickle cell disease)	2	2	21
FSC (Sickle C disease)	2	3	15
FC (Hb C disease)	0	0	6

HT = Hypothyroidism, PKU = Phenylketonuria, GAL = Galactosemia, Hb = Hemoglobin, YTD = Year to Date

Special Surveillance for Invasive Bacterial Diseases

Mahree Fuller Bright, M.A.

Bureau of Communicable Disease Control

The Missouri Department of Health has begun a special surveillance project for invasive bacterial diseases, sponsored and funded by the U.S. Centers for Disease Control, National Center for Infectious Diseases. Missouri is one of six areas to conduct active, laboratory-based surveillance for invasive disease caused by *Haemophilus influenzae*, *Neisseria meningitidis*, *Listeria monocytogenes*, and Group B Streptococcus (GBS). Other participating states and cities are Oklahoma, Tennessee, Maryland, San Francisco, and Atlanta. Martha Huber, R.N. is serving as project coordinator for Missouri.

The primary goal of the study is to develop an understanding of the actual incidence of these diseases in the project

areas and the demographic characteristics of those affected, using a standard methodology. The resulting population-based rates will make possible national estimates and comparisons among geographic areas.

With the exception of GBS, these diseases have been officially reportable in Missouri for some time. During 1991, the existing surveillance systems detected 80 cases of invasive *Haemophilus influenzae* type B (Hib) disease, 37 cases of meningococcal meningitis, and 10 cases of listeriosis (preliminary data). We anticipate the number of cases will be higher during 1992 with more intensive case-finding efforts. The incidence of GBS disease in Missouri as a whole is unknown. A study done in 1990 in the Kansas City area found neonatal rates in 13 hospitals ranging from 0 to 5.3 GBS cases per 1,000 live births per year.

Two case-control studies are also being conducted. The first is designed to evaluate the efficacy of the newer Hib vaccines in preventing invasive Hib disease in children two to 18 months of age. The second will elucidate maternal risk factors for neonatal GBS disease.

The continued assistance of all Missouri physicians, hospitals and laboratories is needed to identify cases of these diseases and to obtain basic demographic and diagnostic information for each one. Each facility is being contacted individually with more detailed information. We appreciate all of the hard work that goes into disease reporting, and believe this is an excellent opportunity for Missouri to contribute valuable information toward the understanding of these serious diseases.



Published by the

Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65102-0570

The *Missouri Epidemiologist* is a regularly scheduled bimonthly newsletter published by the Division of Environmental Health and Epidemiology of the Missouri Department of Health. The division's responsibilities include the prevention and control of communicable diseases and environmentally induced illnesses, including the requisite epidemiological investigations.

The Managing Editor is H. Denny Donnell, Jr., MD, MPH, State Epidemiologist, assisted by an Editorial Board including Bill Schmidt, MPH, Director, and Hilda Chaski, MPH, Deputy Director of the Division of Environmental Health and Epidemiology. Diane C. Rackers is the Production Manager. Questions or comments should be directed to (314) 751-6128 or toll free (800) 392-0272.

This newsletter can be recycled.





MISSOURI EPIDEMIOLOGIST

Volume XIV, Number 2

March-April 1992

Tuberculosis in Missouri Schools

*Vic Tomlinson, M.P.A.
Bureau of Tuberculosis Control*

From January 1990 through December 1991, four outbreaks of tuberculosis occurred in elementary schools in Missouri. Each of the outbreaks started with cases of tuberculosis that occurred among school personnel. In three out of four outbreaks, the cases of tuberculosis were confirmed as positive on culture. Three of these outbreaks occurred in the southeastern part of the state and one occurred in the St. Louis area. Specifically, the outbreak that occurred in St. Louis County in May 1990 was the most extensive of the four outbreaks. An employee with a history of a positive Mantoux skin test developed extensive cavitory tuberculosis. The employee's close contact with a majority of students and staff members resulted in high attack rates as follows. Among the students, 51.3% (176/343) were infected and 9.3% (32/343) were found to have tuberculosis disease. Among the staff, 26.5% (13/49) were infected, but no additional cases of tuberculosis were found. (See the July-August 1991 issue

of the *Missouri Epidemiologist* for additional details concerning the outbreak in St. Louis County.)

The first outbreak during this two-year period occurred in March 1990 in an elementary school in Dunklin County. In this outbreak, an employee was diagnosed with pulmonary tuberculosis. Testing of students and staff revealed that 4.5% (10/222) of the students and 22.6% (14/62) of the staff were infected. No additional cases of tuberculosis disease were found. In this outbreak, 87.5% (21/24) of the students and staff with positive skin tests were placed on preventive treatment for six months.

A second outbreak in southeastern Missouri occurred in August 1991 in an elementary school in Ste. Genevieve County. Contact testing was initiated among the students and staff as a result of an employee being diagnosed with pulmonary tuberculosis. The testing results demonstrated that 0.7% (4/576) of the students and 5.8% (5/86) of the staff had positive skin tests. Those individuals with positive skin tests had chest

x-rays taken and were placed on preventive treatment for six months.

The third outbreak occurred in December 1991 in an elementary school in Howell County. An employee was diagnosed with pulmonary tuberculosis and contact testing was conducted among students and staff in that school. The results revealed that 0.6% (3/485) of the students were infected and 3.0% (2/66) of the staff were infected. Those individuals with positive skin tests had chest x-rays taken and were evaluated for treatment. In this outbreak, 60% (3/5) of those with positive skin tests were placed on preventive treatment for six months.

As a result of the large-scale outbreak that occurred in St. Louis County, the Missouri Advisory Committee for the Elimination of Tuberculosis (MACET)
(continued)

Table 1. Outbreaks of Tuberculosis in Missouri Schools, 1990-91			
County	Students Infected	Staff Infected	Total Treated for Infection
Dunklin	4.5%	22.6%	87.5%
Howell	0.6%	3.0%	60.0%
St. Louis	51.3%	26.5%	84.0%
Ste. Genevieve	0.7%	5.8%	100.0%

Inside this Issue...

Page	
2	Lyme Serology Update
3	Availability of Streptomycin and PAS for TB Treatment
3	Reporting of Reactions to Platelet Transfusion
4	Diarrheal Illness Associated with Dunking Booth
12	Implementation of Gen-Probe for Gonorrhea and Chlamydia
13	DOH Year 2000 Planning
14	Syphilis in St. Louis City

(continued from page 1)

reviewed the recommendations for skin testing children and school personnel. The recommendation for skin testing children was changed as of December 1990. The Department of Health did recommend that children be tested at 12 months of age. MACET and the Department of Health now recommends that children be tested at 12-15 months of age, 4-6 years of age and 12-14 years of age. This recommendation is consistent with that of the American Academy of Pediatrics. However, the recommendation for skin testing school personnel essentially remains unchanged. That current recommendation is that school personnel should be tested at the time of employment. Due to heightened levels of awareness regarding tuberculosis, some school districts have elected to test their school personnel every year or two. In addition, other school districts have asked the Department of Health to issue a recommendation or requirement for more frequent testing than only at the time of employment. Therefore, the issue of testing school personnel is again being reviewed by MACET and the Department of Health. A decision regarding this issue is expected by the summer of 1992.

A recommendation for more frequent testing of school personnel would have an impact on the resources of school districts, local health departments and private physicians. In addition, the question arises as to whether the funds required to conduct the testing would justify the epidemiologic results of more frequent testing. However, each outbreak that occurs is costly in terms of time and resources. More frequent testing also could result in raised levels of awareness concerning tuberculosis. In addition, more frequent testing would provide an opportunity to exercise prevention by identifying infection and preventing future outbreaks.

Questions or comments concerning this report should be directed to:

**Bureau of Tuberculosis Control
(314) 751-6122**

Lyme Disease Serology Update

*Eric Blank, Dr. P.H.
State Public Health Laboratory*

Lyme disease is difficult to diagnose. The definitive lesion associated with the disease, erythema migrans (EM), may not appear in 30-50% of patients, and can vary widely in its presentation. Other symptoms of acute disease such as fatigue, headache and fever are non-specific. Serologic testing for antibody to the causative agent, *Borrelia burgdorferi*, would be extremely helpful to the clinician but has proven to be insensitive and non-specific in early stages of the disease though becoming somewhat more specific as the disease progresses.

The development of better diagnostic tests has been hampered by two major problems. First, poor culture techniques hindered attempts to etiologically confirm cases of Lyme disease which in turn led to a poor understanding of the disease and the immunologic response to infection. Second, there was a lack of a single standardized antigen preparation for use in serologic tests which, in addition to affecting sensitivity and specificity, resulted in different laboratories and different tests measuring different things.

Since November 1990, the Centers for Disease Control (CDC) and the Association of State and Territorial Public Health Laboratory Directors (ASTPHLD) have been working to overcome these problems. CDC has developed improved cul-

ture techniques and through a series of cooperative agreements and grants, has built a large serum bank from etiologically confirmed cases and is maintaining a growing collection of isolates that can be studied. One important outcome of this work has been the identification of a fairly specific immunogenic flagellar protein that could be used as a standard antigen in serologic tests. The CDC and ASTPHLD are in the process of developing a project in which this development can be studied further.

Until better serologic tests are available, the diagnosis of Lyme disease must depend on clinical signs, symptoms and patient history. Serologic testing should only be used to supplement, not confirm, the clinical impression and should be interpreted with caution. The State Public Health Laboratory does not currently perform testing for Lyme disease, however, serologic testing is available from CDC. Also, CDC encourages the collection of clinical material from suspected cases for culture and isolation of the etiologic agent. Culture collection procedures, methods and materials for submission to CDC are available through the Bureau of Communicable Disease Control, at (314) 751-6115. Information concerning the submission of blood specimens for serologic testing can be obtained by contacting the Serology/Virology Unit of the State Public Health Laboratory, at (314) 751-0633.

Address Change?

We receive numerous requests for changes in address which we cannot make. Most of our mailing labels are printed from files maintained by the Board of Registration for the Healing Arts. If you are a practicing physician or veterinarian, your address label comes from this source. We forward your requests for address changes to them, but we have learned that they will not make changes in their mailing list unless you put your request in writing to them or change your address when completing your yearly license renewal. We regret any inconvenience this causes in receiving our newsletter in a timely fashion.

Availability of Streptomycin and Para-Aminosalicylic Acid from CDC for Tuberculosis Therapy

Reprinted from Centers for Disease Control Morbidity and Mortality Weekly Report, Vol. 41, No. 14, April 10, 1992.

Since the fall of 1991, streptomycin (SM) and para-aminosalicylic acid (PAS) (antimicrobial agents used to treat tuberculosis) have been unavailable in the United States.

Beginning April 13, 1992, for an interim period, a limited supply of these drugs manufactured outside the United States will be available through the Centers for Disease Control (CDC) under an inves-

tigational new drug agreement. These drugs initially will be made available only for patients with active tuberculosis that is resistant to both isoniazid (INH) and rifampin (RIF) or, if susceptibility testing results are not yet available, for patients with active tuberculosis in outbreaks where the predominant strains of *Mycobacterium tuberculosis* are known to be resistant to INH and RIF.

The Food and Drug Administration has identified U.S. companies that have agreed to manufacture SM and PAS.

These drugs are expected to be commercially available later this year.

Clinicians interested in obtaining SM or PAS for their patients should be able to provide an abbreviated medical history and for SM, a recent creatinine serum level measurement. Requests should be directed to CDC, Clinical Research Branch, Division of Tuberculosis Elimination, National Center for Prevention Services, at (404) 639-2530.

Raymond L. Bly Retires from Bureau of Sexually Transmitted Diseases

After 21 years as a Centers for Disease Control assignee to Missouri and six years as a Department of Health employee, Raymond L. Bly retired on February 29, 1992, from the Missouri Department of Health as chief of the Bureau of Sexually Transmitted Diseases. Ray served the Department of Health and the citizens of Missouri by guiding the STD program in a commendable fashion. He will be greatly missed and fondly remembered by all his public health friends who wish him well in his retirement.

Bill Huber assumed the duties of chief, Bureau of Sexually Transmitted Diseases, effective March 1, 1992, after five and one half years as assistant chief. Bill has 25 years of experience at all levels of STD programs in six states, four major cities and Puerto Rico. He served overseas on three assignments with the World Health Organization Smallpox Eradication Project. It is expected that the mission of the Bureau of Sexually Transmitted Diseases will continue unchanged.

Reports Requested of Platelet Transfusion Associated Sepsis

*Caryl Collier, R.N.
Nosocomial Infection Control*

The Centers for Disease Control (CDC) is requesting reports of reactions to platelet transfusions that may indicate platelet bacterial contamination. A cluster of septic reactions was investigated by the CDC during 1991.¹ This cluster and other reports² reveal a potential for serious reactions when platelets are contaminated at the time of collection. The storage of platelets at room temperature to maintain function predisposes to rapid bacterial contamination. If a patient has any reaction such as a fever, chills and low blood pressure, please report it to the Nosocomial Infection Control, Bureau of Communicable Disease Control, at (800) 392-0272 or (314) 751-6115. Information needed includes the following: 1) age of the platelet unit; 2) number of units in the pool; 3) ages of each unit within the pool; 4) clinical signs and symptoms of the patient; 5) results of blood cultures if collected; 6) results of gram stain and culture (colony counts) of the platelet unit; 7) antibiotics administered after reaction; and 8) patient outcome. Hospital and patient identities will be kept strictly confidential. This information will be shared with the CDC and the Food and Drug Administration (FDA).

References

1. Centers for Disease Control. Bacterial contamination of platelet pools - Ohio, 1991. MMWR 1992; 41:36-37
2. Morrow JF, Braine HG, Kickler TS, Ness PM, Dick JD, Fuller AK. Septic reactions to platelet transfusions; a persistent problem. JAMA 1991;266:555-558.

An Outbreak of Diarrheal Illness Associated with a Dunking Booth

Harvey L. Marx, Jr., C.P.S.
Central District Health Office

Mahree Fuller Skala, M.A.
Bureau of Communicable Disease Control

Introduction

On September 4, 1991, the Department of Health Central District Office was notified by the Audrain County Health Department of a suspected outbreak of diarrheal illness associated with a community picnic held August 15-17 in a small town (population <500). The picnic was held in the town park and featured several food vendors as well as a dunking booth used as a fundraiser for local non-profit organizations.

Investigation

An epidemiologic and environmental investigation began the same day. The cases initially reported to the local health department were members of organizations that had used the dunking booth. Lists of volunteers from two of the organizations were obtained (the other organizations did not maintain lists). The individuals on the lists were interviewed by telephone to determine whether they had experienced any gastrointestinal symptoms since the picnic, and to document potential exposures including dunking in the booth and food/beverages consumed at the picnic. They were asked to identify any other ill persons they knew; these persons were also interviewed. Well persons who had attended the picnic served as the control group. Data from the questionnaires were entered and analyzed by computer using Epi Info 5.0 software.

An outbreak-related case was defined as an individual who developed diarrhea within 15 days after attending the picnic, or an individual who developed diarrhea after a close contact attended the picnic and developed diarrhea.

Stool specimens were obtained from ill persons to be tested for bacteria and parasites. No food samples from the picnic were available. Environmental swabs and washings of the dunking booth walls were collected on September 5. Water samples were obtained on September 6 from the fire hydrant and fire hose used to fill the dunking booth and from the town water supply. The history of events connected with the dunking booth was thoroughly examined through interviews with the persons involved.

The Missouri Department of Natural Resources (DNR) performed a sanitary survey of the town's public water system. Records of routine testing of the water supply were obtained and examined.

Results

Epidemiologic Study

Of 76 ill persons identified, 61 met the case definition and were included in the analysis. An additional 73 well persons were interviewed, for a total of 134 questionnaires analyzed. None of the cases were hospitalized and there were no deaths. Two cases sought medical attention; no diagnosis was established. The signs and symptoms are shown in Table 1. Illness duration ranged from 1-16 days (mean 4.5 days).

Illness onset dates ranged from August 17 to September 4. The epidemic

curve (Figure 1) shows two peaks, on August 23 and August 31.

Being dunked in the dunking booth was the only exposure variable statistically associated with illness among those attending the picnic. Thirty-nine (66%) of the cases and eight (11%) of the well controls had been dunked (OR=15.8, Cornfield 95% confidence limits 5.8-44.5, $p<0.00000001$ by uncorrected Chi square). None of those who had been dunked reported having a diarrheal illness prior to the picnic. Illness was not associated with attendance on any one day of the picnic, or with consumption of food, beverages or any food/beverage item.

Of the 61 cases, 22 had not been dunked. Eighteen of these cases became ill after the onset of illness in a family member who had been dunked, and they were classified as secondary cases. Sixteen of these persons had also attended the picnic. The epidemic curve in Figure 2 shows the dates of onset of primary and secondary cases; the primary cases peaked on August 23, and the secondary cases peaked on August 31.

Illness duration for the primary cases ranged from 1-16 days (mean=5.2). For the secondary cases, the range was 1-7 days (mean=2.9 days). This difference was not statistically significant.

Table 1. Symptoms reported, Diarrheal illness associated with a dunking booth, Audrain County, Missouri, September 1991

Symptom	No. of Cases	Percent of Total
Diarrhea	61	100%
Nausea	35	57%
Stomach pain	34	56%
Headache	33	54%
Stomach cramps	28	46%
Vomiting	19	31%

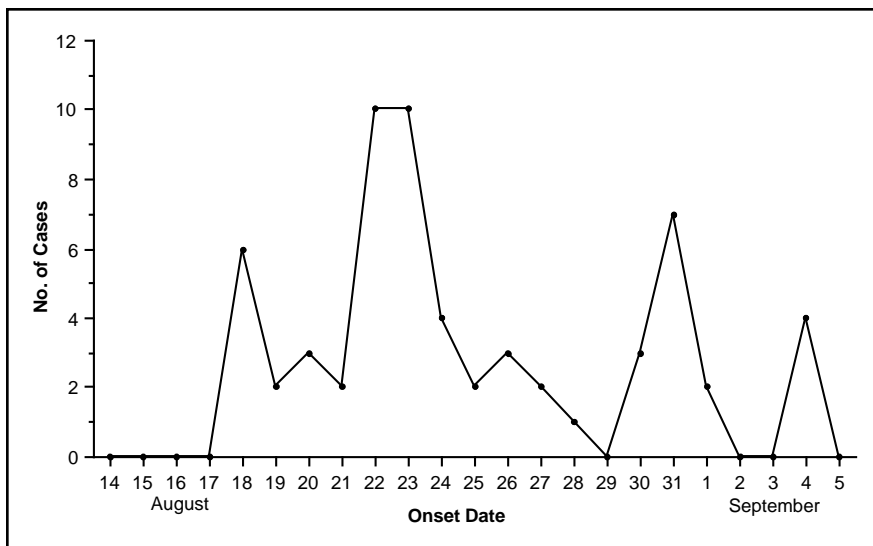


Figure 1. Diarrheal illness after picnic by date of onset, Missouri, 1991

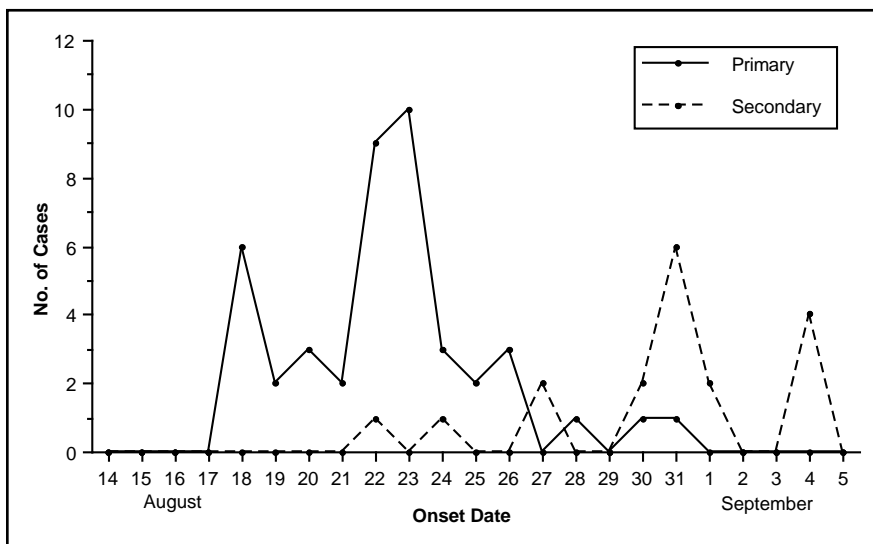


Figure 2. Diarrheal illness after picnic by date of onset, Primary and secondary cases, Missouri, 1991

Incubation period was calculated from the date of dunking for the primary cases; the range was 2-15 days (mean=6.4 days). For secondary cases, incubation period was calculated from the date of onset of the related primary case (range 1-17 days, mean=7.9 days).

The data were reanalyzed using only the 43 primary cases and the 73 controls. The statistical association with dunking was strengthened (OR=79.2, Cornfield 95% confidence limits 19.6-360.0, $p<0.00000001$ by uncorrected Chi square). No other exposure variable was associated with illness.

Laboratory Testing

A total of 37 stool specimens were tested for bacteria and 27 were tested for ova and parasites. All specimens were negative for *Salmonella*, *Shigella*, *Vibrios*, and ova/parasites. Two primary cases were positive for *Yersinia frederiksenii*. These two persons were related but did not live in the same household. Two secondary cases from another family were positive for *Campylobacter coli*. The primary case with whom they were associated did not submit a stool specimen.

All water samples were satisfactory by standard bacteriologic analysis. Routine samples taken by the town water system operator before and after the outbreak for testing of chlorine levels and bacteriologic analysis were also satisfactory. Environmental samples from the dunking booth were negative for *Yersinia* and *Campylobacter*.

History of Dunking Booth

The dunking booth was constructed of sheet metal. The booth consisted of a tank mounted on a trailer, with a platform mounted above the tank. Two people sat in a screened area on separate parts of the platform. Spectators threw balls at two trip mechanisms, one for each side of the platform. When a ball hit a trip switch, one of the persons was dunked into the tank of water.

The dunking booth was filled on August 14 from a fire hydrant in the park. The hydrant was reportedly flushed for 5 minutes before the booth was filled using hose #8 from the local fire department. The water was reported to appear murky as it entered the booth. On Friday, August 16, half of the water in the booth was replaced using the same hydrant and fire hose. No chlorine was added to the dunking booth during its use, August 15-17. The water was reported to be very turbid toward the end of the picnic.

It had been at least five years since the fire department had drawn pond water through a firehose to fight a fire.

Organizations that had used the dunking booth in other towns before and after the picnic were contacted. They reported no unusual illness among their members.

Review of Public Water System

On June 26, 1991, a break had occurred on a branch water line that is part of the park system. The broken water line was repaired and flushed at that time. No illness had been reported in association with the break.

The sanitary survey of the public water system performed by DNR revealed violations in the water system source, treatment, distribution system and administration.

Discussion

The causative agent of this outbreak could not be determined conclusively on the basis of laboratory results or clinical manifestations. We would have expected more positive results if either of the organisms identified were responsible for the outbreak. The average time elapsed between onset of illness and collection of stool specimen was 14 days (range 3-23 days), so it is possible that the specimens were collected too late. The epidemiology of *Yersinia frederiksenii* and its role in human illness have not been clarified; it has seldom been recovered from stool specimens¹.

The presence of apparent secondary spread, along with the predominant symptoms and incubation period, point to an infectious agent. A bacterium is most likely, based on the incubation period; however, fever was not reported by the ill persons and few sought medical care.

Statistical analysis indicated an association between illness and being dunked in the dunking booth. No association was found with foods or beverages consumed at the picnic. No evidence of contamination of the town water supply was found, although several problems were identified with the system's construction, operation and management which created the potential for contamination.

The agent was apparently transmitted via the dunking booth, and illness probably resulted from ingestion of contaminated water from the unchlorinated booth or from exposure to an ill person. The organism might have been introduced via an infected "dunkee," or by the clothing or shoes of a "dunkee," and survived and multiplied in the booth water.

This is the first outbreak of this type reported to the Missouri Department of Health. Review of CDC surveillance

reports of waterborne outbreaks since 1986 did not reveal any outbreaks of acute gastrointestinal illness associated with dunking booths^{2,3}.

Recommendations

1. When a dunking booth is used, the free available chlorine level should be maintained at least at 0.4 ppm (optimum 1.0 ppm), with a pH range of 7.2-8.2. The water should be tested hourly using a pool water test kit. When the water becomes so turbid that the bottom of the tank can no longer be seen, the tank should be drained and refilled with fresh water as soon as practicable.
2. Before any community event such as the picnic, the local health department should be contacted for recommendations on food service operations and any other potential environmental hazards such as a dunking booth.

3. The DNR recommendations on this town's public water supply should be implemented.

Acknowledgements

In addition to the community involved, special thanks are extended to the following for their active support of this investigation:

Audrain County Health Department

DNR, Division of Environmental Quality, NE Regional Office

State Public Health Laboratory

References

1. Butler T. *Yersinia* species (including plague). In: Mandell GL, Douglas RG, Bennett JE, eds. Principles and practices of infectious diseases. 3rd ed. New York: John Wiley & Sons, Inc., 1990:1755.
2. CDC. Waterborne disease outbreaks, 1986-88. MMWR 1990; 39(no. SS-1).
3. CDC. Waterborne disease outbreaks, 1989-90. MMWR 1991; 40(no. SS-3).

Teaching Materials on Cholera

Since January 1991, epidemic cholera has spread to 13 Latin American countries, covering the entire Pacific Coast of South America from Chile to Mexico, and threatening the Caribbean. The Centers for Disease Control have prepared the following materials to use for presentations and education on cholera:

Slide Set: Fifty-four slides covering clinical and epidemiologic features of cholera and summarizing the Latin American cholera epidemic, including a text commentary keyed to each slide. The information is up-to-date as of January 14, 1992.

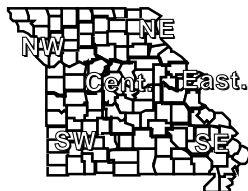
Educational video: "Defeating Cholera," shot in Ecuador during the current epidemic. This 15-minute video is intended for health care providers who want to know the clinical basics of diagnosis and treatment of cholera.

The materials are available for loan through the Missouri Department of Health.

Films and Literature
Missouri Department of Health
1730 E. Elm, P.O. Box 570
Jefferson City, MO 65102
(314)751-6048


Correction:

In the January-February 1992 issue of the *Missouri Epidemiologist*, we inadvertently forgot to give credit to Harvey L. Marx, Jr., C.P.S., Central District Health Office for the article on the outbreak of *Salmonella infantis* associated with a wedding printed on pages 14-15 of that issue.



Missouri Department of Health
Disease Prevention - Communicable Disease Control
BIMONTHLY MORBIDITY REPORT

Reporting Period *
November - December , 1991

	Districts							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	SPGFLD GREENE CO.	2 MONTH STATE TOTALS		CUMULATIVE			
	** NW	NE	CD	SE	** SW	** ED	**** OTHER					1991	1990	FOR 1991	FOR 1990	5 YR MEDIAN	
Vaccine Preventable Dis.																	
Chickenpox	309	87	160	201	133	150		0	0	0	6	1046	1207	7678	10591	9086	
Diphtheria	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
Hib Meningitis	0	0	0	1	1	1		0	1	0	1	5	14	43	88	131	
Hib Other Invasive	1	0	2	0	1	1		0	0	0	1	6	15	39	57	**	
Influenza	28	18	81	24	6	30		40	36	43	18	324	1	462	220	148	
Measles	0	0	0	0	0	0		0	0	0	0	0	2	1	103	103	
Mumps	2	0	0	4	0	1		0	0	0	0	7	6	40	62	62	
Pertussis	3	5	1	3	1	0		2	4	0	0	19	8	83	116	46	
Polio	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	
Rubella	0	0	0	0	0	0		0	0	0	0	0	3	5	3	1	
Tetanus	0	0	0	1	0	0		0	0	0	0	1	0	1	0	1	
Viral Hepatitis																	
A	7	1	3	24	3	1		32	8	6	1	86	190	653	619	619	
B	12	4	15	3	5	2		29	23	9	10	112	117	549	633	633	
Non A - Non B	0	1	0	0	0	0		8	0	0	0	9	14	31	42	46	
Unspecified	0	0	1	0	0	0		1	0	0	0	2	5	15	19	19	
Meningitis																	
Aseptic	6	1	3	2	4	2		3	0	2	1	24	36	277	246	172	
Meningococcal	3	1	1	0	0	1		0	0	1	0	7	3	37	31	33	
Other	2	1	0	1	1	1		0	0	0	0	6	5	62	66	65	
Enteric Infections																	
Campylobacter	7	1	10	13	8	7		9	6	11	4	76	73	602	547	441	
Salmonella	12	9	12	50	9	9		9	9	17	5	141	106	617	723	723	
Shigella	7	0	2	0	1	2		27	9	6	1	55	64	259	284	411	
Typhoid Fever	0	0	0	0	0	0		0	0	0	0	0	0	2	4	4	
Parasitic Infections																	
Amebiasis	1	0	1	0	1	1		0	0	1	1	6	5	25	26	26	
Giardiasis	33	5	18	13	11	9		23	3	16	3	134	173	790	878	690	
Sexually Transmitted Dis.																	
AIDS	16	2	12	0	3	7	5	40	26	13	3	127	127	655	599	403	
Gonorrhea	75	14	70	75	46	30		569	1170	531	39	2619	2760	17488	20012	18712	
Genital Herpes	55	9	56	30	7	32		116	48	120	37	510	527	3244	3310	2250	
Nongonoc. urethritis	29	0	22	28	1	0		309	506	406	1	1302	1165	8516	7737	7606	
Prim. & Sec. syphilis	3	0	5	5	9	1		54	44	18	0	139	57	572	273	154	
Tuberculosis																	
Extrapulmonary	2	0	1	2	5	2	0	2	0	0	1	15	8	55	41	51	
Pulmonary	0	0	6	11	5	5	5	7	5	3	0	47	37	199	271	269	
Zoonotic																	
Animal Bites	91	24	43	45	44	77		0	0	345	17	686	613	6514	5442	5442	
Psittacosis	0	0	0	0	0	0		0	0	0	0	0	0	0	0	2	
Rabies (Animal)	0	0	0	1	1	0		0	0	0	0	2	2	28	30	59	
Rocky Mtn. Sp. Fever	0	0	0	1	0	0		0	0	0	0	1	2	25	36	36	
Tularemia	0	0	1	1	3	0		0	0	0	0	5	4	44	33	39	

Low Frequency Diseases

Anthrax
Botulism
Brucellosis - 2
Chancroid - 1
Cholera
Cryptosporidiosis
Encephalitis (infectious) - 5

Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease
Legionellosis - 4
Leptospirosis - 2
Lymphogranuloma Venereum - 1

Malaria- 1
Plague
Rabies (human)
Reye's Syndrome
Rheumatic fever, acute
Toxic Shock Syndrome
Trichinosis

Outbreaks

Foodborne - 2
Waterborne
Nosocomial - 8
Pediculosis - 1
Scabies - 2
Other - Hepatitis A - 2

*Reporting Period Beginning November 3, Ending December 31, 1991

**Totals do not include KC, SLC, SLCo, or Springfield

***State and Federal Institutions

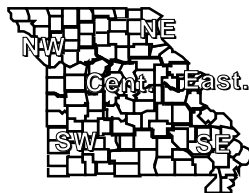
***Data not available

Due to data editing, totals may change.

TEAR OUT FOR FUTURE REFERENCE

Bimonthly Morbidity Summary, November/December 1991

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)



Missouri Department of Health
Disease Prevention - Communicable Disease Control
BIMONTHLY MORBIDITY REPORT

Reporting Period *
January - February, 1992

	Districts							KANSAS CITY	ST. LOUIS CITY	ST. LOUIS CO.	SPGFLD GREENE CO.	2 MONTH STATE TOTALS		CUMULATIVE		
	** NW	NE	CD	SE	** SW	** ED	*** OTHER					1992	1991	FOR 1992	FOR 1991	5 YR MEDIAN
Vaccine Preventable Dis.																
Chickenpox	504	126	140	471	198	499		0	0	0	4	1942	2101	1942	2101	2418
Hib Meningitis	1	0	0	0	0	1		0	0	0	0	2	15	2	15	15
Hib Other Invasive	0	0	0	0	0	0		0	0	0	1	1	9	1	9	**
Influenza	0	0	8	2	2	1		1	2	14	2	32	24	32	24	39
Measles	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Mumps	2	0	0	0	0	0		1	0	1	0	4	3	4	3	10
Pertussis	3	0	2	0	0	0		0	0	2	1	8	14	8	14	9
Polio	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Rubella	0	0	0	0	0	0		0	0	0	0	0	1	0	1	0
Tetanus	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Viral Hepatitis																
A	5	2	3	7	12	5		4	9	8	0	55	132	55	132	105
B	13	1	3	3	4	0		18	22	10	4	78	56	78	56	61
Non A - Non B	8	0	3	2	4	0		4	1	11	1	34	5	34	5	6
Unspecified	0	0	0	0	0	0		0	0	1	0	1	1	1	1	2
Meningitis																
Aseptic	3	0	0	0	1	1		1	0	1	4	11	25	11	25	11
Meningococcal	2	0	0	0	0	0		0	1	2	0	5	6	5	6	8
Other	0	2	0	1	0	1		4	0	0	0	8	12	8	12	11
Enteric Infections																
Campylobacter	10	0	0	1	6	1		2	3	8	7	38	73	38	73	33
Salmonella	8	3	3	2	9	1		7	2	7	3	45	55	45	55	69
Shigella	4	0	0	0	3	0		20	1	11	0	39	21	39	21	28
Typhoid Fever	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Parasitic Infections																
Amebiasis	0	0	1	0	0	0		4	0	1	0	6	7	6	7	2
Giardiasis	17	1	5	9	3	15		13	4	12	2	81	80	81	80	67
Sexually Transmitted Dis.																
AIDS	12	1	6	5	3	1	5	24	32	14	2	105	78	105	78	59
Gonorrhea	63	7	63	75	30	21		637	1126	446	35	2503	2587	2503	2587	2786
Genital Herpes	45	11	42	26	23	29		127	78	151	30	562	541	562	541	345
Nongonoc. urethritis	26	0	33	32	2	0		351	593	440	6	1483	1481	1483	1481	1156
Prim. & Sec. syphilis	2	0	2	5	3	1		56	78	10	1	158	68	158	68	26
Tuberculosis																
Extrapulmonary	0	0	1	1	2	0	0	0	0	1	0	5	3	5	3	3
Pulmonary	2	0	3	1	1	0	2	3	0	5	3	20	26	20	26	26
TB Infection	20	2	15	31	12	9		74	4	95	37	299	**	299	**	**
Zoonotic																
Animal Bites	115	26	43	101	49	64		0	0	331	15	744	411	744	411	411
Psittacosis	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Rabies (Animal)	0	0	0	0	0	0		0	0	0	2	2	2	2	2	2
Rocky Mtn. Sp. Fever	1	0	0	0	0	0		0	0	0	0	1	0	1	0	0
Tularemia	0	2	0	1	0	0		0	0	0	0	3	2	3	2	2

Low Frequency Diseases

Anthrax
Botulism
Brucellosis
Chancroid
Cholera
Cryptosporidiosis
Diphtheria
Encephalitis (infectious)
Encephalitis (viral/arbo-viral)
Granuloma Inguinale
Kawasaki Disease - 2
Legionellosis
Leptospirosis
Lymphogranuloma Venereum - 2
Malaria - 2
Plague
Rabies (human)
Reye's Syndrome
Rheumatic fever, acute
Toxic Shock Syndrome
Trichinosis

Outbreaks

Foodborne - 3
Waterborne
Nosocomial - 6
Pediculosis
Scabies
Other - 1 - Group A Strep

*Reporting Period Beginning January 1, Ending February 29, 1992 .

**Totals do not include KC, SLC, SLCo, or Springfield

***State and Federal Institutions

** Data not available

Due to data editing, totals may change.

Bimonthly Morbidity Summary, January/February 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

National Electronic System for Surveillance (NETSS)

Michael Fobbs

Bureau of Communicable Disease Control

Missouri has been a part of the NETSS system and its predecessor Electronic Surveillance Project since January 1988. Information from Missouri's disease surveillance, which is based on physician reporting has been a part of national reporting in the Morbidity and Mortality Weekly Reports published by the Centers for Disease Control (CDC) in Atlanta, Georgia.

An electronic record is transmitted to CDC weekly with key demographic variables for each case. Information describing the disease or event is sent as part of the record. No patient identifiers are reported to CDC as part of this system.

In January 1992, the NETSS system in Missouri was updated. This new format will be in all states by January 1993. It offers many advantages over the old system. The system now has the capability to also report events such as lead poisoning. In the coming years, its ability to look at non-infectious disease processes will be enhanced. A description of some of the changes and additions follow.

- Diseases or conditions such as chickenpox or tuberculosis, which are reported as aggregate numbers, are now recognized as summary records with a case count.
- The onset date or event date field is now hierarchical. If an onset date is not available, then the date of diagnosis, date of laboratory results, date of report to county health department, or date of report to the state health department can be used using this order.
- Age now comes with a field to denote years, months, weeks or days.
- The race field now reflects census categories.
- Ethnicity is coded as a separate field, Hispanic or Non-Hispanic.

- Records associated with outbreaks may be flagged for separate analysis.
- Status of the case record (confirmed, probable or suspect) is now transmitted.
- Whether the disease was acquired within the state, outside the state or even during travel in another country is now indicated.
- Year of report is now transmitted as a separate variable for ease of multi-year analysis of specific diseases.

Thanks to the level of reporting by physicians, hospitals and laboratories in Missouri, this format will allow us to generate graphs, tables and maps better describing disease incidence in the state. The new format also permits increased

flexibility and timeliness of reporting. In combination with the Epi Info epidemiological software package and Epimap, the mapping software created to work in concert with NETSS system, it is now possible to provide direct feedback to local health departments and physicians within the counties about specific disease rates or trends. We can now create maps of disease cases or rates based on the level of reporting. These maps can be generated for one county or several contiguous counties to compare trends across county lines or the state as a whole. Continued reporting by physicians in the state will allow us to develop a clear and accurate picture of disease incidence in each local area. For more information, contact the CD Coordinator in your area.

State Public Health Laboratory Report

Newborn Screening — Hypothyroidism, Phenylketonuria, Galactosemia and Hemoglobinopathies

James Baumgartner, B.S., M.B.A., Chief, Metabolic Disease Unit

	Jan 92	Feb 92	Total YTD
Specimens Tested	9,545	8,581	18,126
Initial (percent)	67.7%	69.2%	12,399
Repeat (percent)	32.3%	30.8%	5,727
Specimens: Unsatisfactory	120	109	229
HT Borderline	272	328	600
HT Presumptive	11	8	19
PKU Borderline	5	4	9
PKU Presumptive Positive	0	0	0
GAL Borderline	43	35	78
GAL Presumptive Positive	2	1	3
FAS (Sickle cell trait)	91	98	189
FAC (Hb C trait)	30	22	52
FAX (Hb variant)	13	15	28
FS (Sickle cell disease)	1	5	6
FSC (Sickle C disease)	1	0	1
FC (Hb C disease)	1	0	1

HT = Hypothyroidism, PKU = Phenylketonuria, GAL = Galactosemia, Hb = Hemoglobin, YTD = Year to Date

Implementation of Gen-Probe for the Detection of *Neisseria gonorrhoeae* and *Chlamydia trachomatis*

Bill Huber

Bureau of Sexually Transmitted Diseases

Screening programs to identify *Neisseria gonorrhoeae* in outstate Missouri where culture plates must be transported to the laboratory by mail have been problematic when specimens die in transit resulting in false negative reports. There have been numerous attempts to address this problem over the past several years.

On September 1, 1991, after favorable, initial comparison testing, the State Public Health Laboratory began an extensive pilot testing program in selected rural counties using a recently developed test called Gen-Probe Pace 2. The Gen-Probe Pace 2 system for *N. gonorrhoeae* is a rapid DNA probe test for male urethral and female endocervical specimens. The specimen can be mailed without adverse effect, and a test for chlamydia can also be performed on the

same specimen that cannot be done on the gonorrhea culture plates. The initial results of the pilot study have been excellent with Gen-Probe exhibiting a sensitivity of 96% and specificity of 95% for the detection of *N. gonorrhoeae*. The Gen-Probe test has not received extensive evaluation for the detection of *C. trachomatis* by the Missouri State Public Health Laboratory; however, it is expected that the results will be similar to those seen for *N. gonorrhoeae*. Gen-Probe does have limitations in that it has not yet been approved for sites other than urethral and endocervical (i.e. throat, anus, joint, eye, etc.) or for other non-diagnostic purposes (i.e. test-of-cure, medical legal, sensitivity testing, etc.) and it is much more expensive than the culture plate testing. Gen-Probe is a screening test at this time and, as in any clinical situation, results of the test must be interpreted with respect to the patient's clinical manifestations.

Due to the need to use a more acceptable test for screening in outstate Missouri and the additional cost burden of the advanced testing procedure, the gonorrhea and chlamydia screening programs will be reviewed and revised. Non-productive test sites will likely be cut back or eliminated in order to concentrate efforts in the screening sites which are cost effective. It will be based upon a preliminary survey during which time the Gen-Probe will be used in all sites so an accurate confirmation of effective and efficient clinical sites can be conducted. Selected screening sites throughout outstate Missouri will begin using the Gen-Probe Pace 2 System to test for both *N. gonorrhoeae* and *C. trachomatis* on the same specimen. Use of the Gen-Probe in outstate Missouri will provide a more accurate diagnostic procedure for the patients screened. The target date for revision is July 1, 1992.

Missouri Fatal Accident Circumstances and Epidemiology (MOFACE)

Thomas Ray

Bureau of Environmental Epidemiology

In October 1991, the Centers for Disease Control, National Institute for Occupational Safety and Health (CDC-NIOSH) entered into a cooperative agreement with the Missouri Department of Health, Bureau of Environmental Epidemiology, to fund a traumatic occupational fatality surveillance and intervention program. This program is called the Missouri Fatal Accident Circumstances and Epidemiology (MOFACE) project. MOFACE was initially established by CDC-NIOSH in 1982 to develop information on additional causal factors for occupational fatalities.

Currently there are nine state-based projects: Missouri, Wisconsin, Minnesota, Massachusetts, Alaska, Wyoming, California, New Jersey and Colorado. The objective of these surveillance, research and intervention programs is to

prevent future fatal work-related injuries by studying past occurrences. These studies include reviewing the work environment, the task the worker was performing, the tools the worker was using, the energy exchange resulting in the fatal injury and the role of management in controlling how these factors interact.

The primary goal of the Missouri cooperative agreement is to effect a measurable reduction in traumatic occupational fatalities. The objectives for achievement of this goal include:

1. Developing a timely, comprehensive multi-source state level surveillance system to identify and record basic epidemiologic data on traumatic fatalities occurring in the state;
2. Conducting investigations of selected traumatic fatalities using the NIOSH FACE investigative model;

3. Identifying potential risk factors for selected traumatic occupational fatalities that will be useful for prioritizing research efforts and for targeting intervention strategies;
4. Developing intervention demonstration projects to reduce traumatic occupational injuries and fatalities; and
5. Developing and disseminating preventive recommendations to reduce the risk of fatal traumatic injuries within the state.

The CDC-NIOSH project currently has detailed epidemiologic investigation protocols for falls, electrocutions and asphyxiation deaths caused by entry into confined spaces. MOFACE will investigate these types of occupational fatalities. Additional epidemiologic investigation protocols will be developed jointly in the future with CDC-NIOSH.

Department of Health Updates Long Range Strategic Plan

Karen M. Northup, R.N., M.S.N.
Bureau of Smoking, Tobacco, and Cancer

The Department of Health is currently redeveloping its strategic plan for the year 2000. As part of this process, the existing plan for the year 2000, developed five years ago, was evaluated to determine progress to date. The results of that evaluation were recently published in *Strategic Plan for the Year 2000 Progress Report: January, 1992*. Additionally, as part of the planning process, an assessment of the department was completed to determine strengths and weaknesses related to the public health infrastructure in Missouri and the organization's capacity to support this infrastructure.

Since the development of the department's strategic plan for the year 2000, national health objectives for health promotion and disease prevention were published in *Healthy People 2000* by the U.S. Department of Health and Human Services, Public Health Service. These objectives were incorporated in the third edition of *Model Standards*, which were titled *Healthy Communities 2000: Model Standards* published in 1991. This work provides comprehensive goals and objectives to encourage community leaders to work together to improve health, the environment and quality of life in communities.

The department has utilized these national documents in updating its strategic plan. Workgroups were established for each chapter of *Healthy Communities 2000: Model Standards* to determine Missouri's response to the national objectives. These groups included representatives from the department, local health units, other state agencies, private providers, professional organizations, universities, consumers, voluntary organizations and others with expertise in the subject areas.

In December 1990, the department held a strategic planning meeting in which

staff and invited guests re-evaluated the department's mission and established strategic goals that will serve as the priority areas for the year 2000. Currently department staff are establishing objectives that will represent all areas of programmatic responsibility within the department.

Objectives specifically related to epidemiology of communicable diseases include the following: reduce the reported annual incidence of hepatitis A to 5 per 100,000 and hepatitis B to 8 per 100,000; reduce *Salmonella spp.* to <10 per 100,000, *Campylobacter jejuni* to <10 per 100,000, *Escherichia coli* O157:H7 to <4 per 100,000, *Yersinia enterocolitica* to <0.9 per 100,000, and *Listeria monocytogenes* to <0.2 per 100,000; confine the annual incidence of new HIV infections to <12 per 100,000; reduce chlamydia to <240 per 100,000, gonorrhea to <225 per 100,000, and primary and secondary syphilis to <10 per 100,000; and reduce tuberculosis to <3.5 per 100,000. The expected number of cases in the year 2000 would be zero

for diphtheria, measles, congenital rubella, wild virus type polio, and tetanus among persons <25 years of age, <10 for perinatal hepatitis B, <25 for mumps, and <50 for HIB and for pertussis.

Objectives relating to immunizations include achieving 90% immunization levels for the basic series for children <2 years of age and 96% for children in child care facilities and schools; 50% for pneumococcal pneumonia and influenza among non-institutionalized high risk populations as defined by the Immunization Practices Advisory Committee of CDC; and 35% for hepatitis B among homosexual men, 50% among occupationally-exposed persons, 75% among intravenous drug users in drug treatment programs, and 90% among infants born of women with hepatitis B surface antigen.

Public hearings were held in late April for communities to respond to the updated plan. Following the hearings, the department expects to publish the final document this summer.

Laboratory Services Manual

In February the State Public Health Laboratory began distributing the latest edition of its manual of services. This manual provides information concerning the kinds of testing available at the State Public Health Laboratory and sample or specimen submission requirements. The first printing has been distributed to local health departments and independent and hospital labs. A second printing can be made depending on the number of requests we receive. The State Public Health Laboratory is presently working with the district health offices to schedule inservice programs to familiarize district and local health staff with the manual. We hope to begin these programs sometime in May and conclude them in July. If you are interested in receiving the State Public Health Laboratory Services Manual, call (314) 751-3334 and leave your name and address.

Syphilis in St. Louis City

Kim Lemmon, B.S.
Leslie Compton, B.S.N., M.A.
Dian Sharma, Ph.D.
St. Louis City Health Division

St. Louis City is experiencing a significant increase in the incidence of reported early syphilis (primary, secondary and early latent syphilis under one year duration). An increase in the number of syphilis cases presenting at local area emergency rooms has also been noted.

Throughout the last six months of 1991, 139 early syphilis (<1 yr) cases were diagnosed among St. Louis City residents. This represents an increase of 148% from the 56 cases diagnosed during the same period in 1990. (See Figure 1.) Approximately three-fourths of these new cases occurred among inner city, heterosexual population aged 20 to 35. Drug usage, especially crack cocaine, among this population has contributed to the increase. Over 40% of city residents diagnosed with early syphilis admit to crack usage or to a recent sexual exposure to a partner who used the drug. Obviously, the risk of transmission of other STDs is also associated with these behaviors. Gonorrhea, chlamydia, non-specific urethritis, and HIV continue to be reported in significant numbers.

The causative agent of syphilis is the bacterium, *Treponema pallidum*. Transmission occurs almost entirely through direct intimate contact with the infectious lesions of early syphilis. Because of its pervasive nature, untreated syphilis can cause severe damage to numerous body systems.

Clinically, the first sign of primary syphilis is a chancre or lesion. This usually presents as a single sore at the point where the causative organism enters the body, although multiple lesions can occur. The lesion is generally painless and appears as a firm, indurated, eroded papule with a firm, raised border. Lymphadenopathy, commonly unilateral but

sometimes bilateral, is associated with genital lesions. Primary lesions are not confined to the genital region only, but may also occur in oral and rectal areas. Without treatment, the disease progresses despite the fact that the lesions will heal spontaneously.

Patients presenting with a skin rash and lesions or mucous patches on mucous membranes should be considered at high risk for secondary syphilis. These lesions are bilaterally symmetrical and may be macular, follicular, papulosquamous, pustular or papular. They are seldom pruritic and are usually dry. Alopecia, a patchy loss of hair, can occur, involving the scalp, eyelashes and eyebrows. Condylomata lata, a highly infectious wet, raised, wart-like rash, is usually identified in the anogenital region. Lesions of the mouth, throat, and cervix (mucous patches), as well as generalized lymphadenopathy, frequently occur in secondary syphilis.

During latent syphilis, serologic tests are reactive, although there is an absence of clinical signs. Latency inevitably occurs at some point during the course of infection. Proper diagnosis is contingent on obtaining a complete history focusing on sexual exposure, early

lesions and previous history of serologic tests or antecedent treatment.

In addition to diagnosis and treatment of the index case, it is imperative that all sexual partners receive prophylactic or preventive treatment regardless of their serologic status. Due to a protracted incubation period (10-90 days), this preventive treatment is recommended in order to abort the disease in its prodromal stage and prevent further transmission. It is advisable that appropriate counseling be made available at the time of treatment that incorporates a discussion of reduction of unsafe sexual behavior with instructions on proper use of condoms.

As a consequence of the reemergence of this STD, congenital syphilis is also on the rise in the city of St. Louis. Three cases were reported in 1990 and five cases in 1991 compared to no cases identified in the previous eight years. If maternal serology is positive at the time of delivery, the newborn should be evaluated and treated immediately regardless of the newborn's serologic status. If the baby is reactive at birth, immediate treatment and appropriate evaluation should be given with follow-up at 3, 6, and 12 months concurrent with routine check

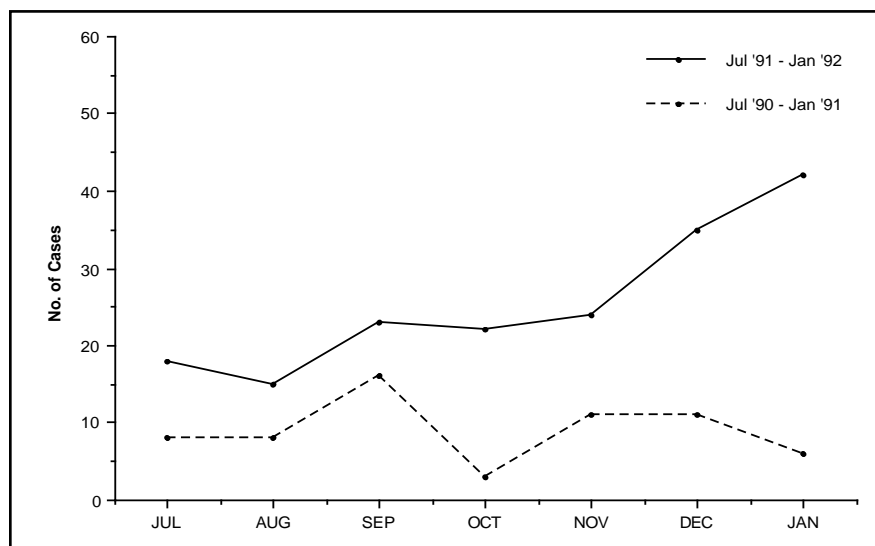


Figure 1. Syphilis cases in St. Louis City, July 1990-January 1991 versus July 1991-January 1992

ups. Complete guidelines for management of congenital syphilis can be found in the 1991 twenty-second edition of the *Report of the Committee on Infectious Diseases* published by the American Academy of Pediatrics.

Syphilis, historically named "the great imitator," can mimic the symptoms of certain dermatological disorders. Therefore, ordering proper serologic tests is of utmost importance. Two nontreponemal antigen tests; the Rapid Plasma Reagin (RPR) and the Venereal Disease Research Laboratory (VDRL) are excellent for screening purposes due to their sensitivity and availability. Reagin is detected in the serum about four to six weeks after infection. When possible, darkfield examination is preferable for diagnostic confirmation of primary syphilis. Treponemal confirmatory tests, including Fluorescent Treponemal Antibody-Absorption (FTA) and the Microhemag-glutination for *Trepon-*

mal pallidum (MHA-TP), are used to confirm positive nontreponemal test results.

Penicillin is the drug of choice in the treatment of early syphilis. The current treatment guidelines prepared by the Centers for Disease Control and adopted by the Missouri Department of Health recommend a single dose of Benzathine penicillin G, 2.4 million units IM for primary and secondary stages, and early latent syphilis under one year duration with a negative spinal tap. In absence of a spinal test, 2.4 million units of Benzathine penicillin G should be administered weekly times three. Patients with a positive spinal tap may require, in addition, aqueous crystalline penicillin. Alternate regimens for penicillin allergic patients include: Doxycycline 100 mg, orally two times a day for 14 days or Tetracycline 500 mg orally four times a day for two weeks.

Patients suspected of infection may be referred to the St. Louis City Health Division STD Clinic for evaluation and treatment. Health care providers can verify histories of seropositive patients or obtain advice on managing syphilis cases by calling (314) 658-1025.

All STD services are free to patients age 13 and above.

Parental permission is not required.

The clinic is located at:

**634 N. Grand
St. Louis, MO
Ph: (314) 658-1025**

Kim Lemmon - Manager
St. Louis STD Clinic

Leslie Compton - Health Educator
St. Louis City Health Division

Dian Sharma - Health Commissioner
St. Louis

Editorial Comment:

Early syphilis has also increased dramatically throughout Missouri during the past two years, particularly in the Southeast and Southwest Districts, and the Kansas City area. (See Figure 2.) Most reported increases seem to be associated with the drug using population and their sex partners. Physicians should consider all patients in this subculture to be at high risk for syphilis and HIV infection. All patients with genital ulcers or any STD should be specifically screened for syphilis and HIV.

The partner notification process is an extremely important component of the STD control program. Reporting of patients who are diagnosed is essential in order to provide these disease intervention services. Reports can

be made to the local health department or the Bureau of Sexually Transmitted Diseases.

Current treatment guidelines and diagnostic criteria are available on request from:

**Missouri Department
of Health
Bureau of Sexually
Transmitted Diseases
P.O. Box 570
Jefferson City, MO 65102
(314) 751-6139**

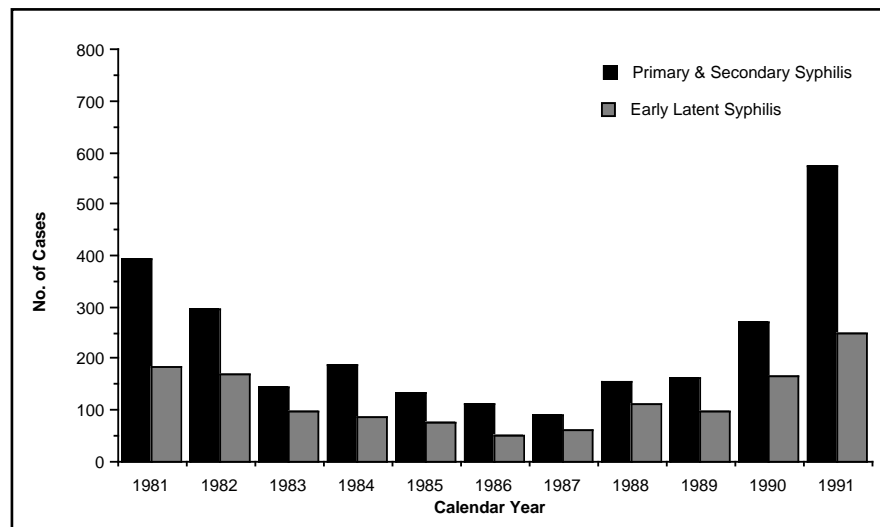


Figure 2. Early syphilis cases, Missouri, 1981-91



Published by the
Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65102-0570

The *Missouri Epidemiologist* is a regularly scheduled bimonthly newsletter published by the Division of Environmental Health and Epidemiology of the Missouri Department of Health. The division's responsibilities include the prevention and control of communicable diseases and environmentally induced illnesses, including the requisite epidemiological investigations.

The Managing Editor is H. Denny Donnell, Jr., MD, MPH, State Epidemiologist, assisted by an Editorial Board including Bill Schmidt, MPH, Director, and Hilda Chaski, MPH, Deputy Director of the Division of Environmental Health and Epidemiology. Diane C. Rackers is the Production Manager. Questions or comments should be directed to (314) 751-6128 or toll free (800) 392-0272.

This newsletter can be recycled.



Attention
Doctors

Did you know that...

Tuberculous Infection

is now **reportable** in Missouri?

For additional information, call your local health department, or the Missouri Department of Health's Bureau of Tuberculosis Control, (314) 751-6122.

Hepatitis B Universal Vaccination

Larry Franklin
Bureau of Immunization

On November 22, 1991, the Immunization Practices Advisory Committee (ACIP) released recommendations concerning a comprehensive strategy for eliminating hepatitis B transmission in the United States through universal childhood vaccination of all newborns. These recommendations were published in the Centers for Disease Control's *Morbidity and Mortality Weekly Report*, November 22, 1991, Vol. 40, No. RR-13.

The Missouri Department of Health will adopt these recommendations and is seeking funds to implement routine hepatitis B immunization of infants. A grant proposal has been submitted to the Centers for Disease Control for funding which would be used to establish a tracking system to follow an infant's immunization history, immunization follow-up, and statistical analysis. In addition, funds would also be used for vaccine, training, and disease intervention.

The acute and chronic consequences of hepatitis B virus infection are major

health problems in the United States. The reported incidence of acute hepatitis B increased 37 percent from 1979 to 1989. An estimated 200,000 to 300,000 new infections occurred annually during the period from 1980 to 1991.

The ACIP recommends for all infants, except those born to HBsAg positive mothers, a series of three intramuscular doses (0.25 ml) of hepatitis B vaccine. There are two vaccine schedules as described in Table 1.

The first dose can be administered during the newborn period, preferably before the infant is discharged from the hospital, but no later than when the infant is two months of age. If the vaccination series is interrupted after the first dose, the second dose should be given as soon as possible. The second and third doses should be separated by an interval of at least two months. If only the third dose is delayed, it should be given when convenient.

For infants born to HBsAg positive mothers, 0.5 ml of vaccine is used for the series and the initial dose should be

given within 12 hours of birth and accompanied by 0.5 ml HBIG. The infant should be evaluated between 12 and 15 months of age for evidence of seroconversion.

The reduction in acute hepatitis B and hepatitis B-associated chronic liver disease resulting from universal infant vaccination may not become apparent for a number of years. The estimated cost of universal hepatitis B vaccination for infants is less than the direct medical and work loss costs associated with the estimated five percent lifetime risk of infection.

The current recommendation for universal infant vaccination neither precludes vaccinating adults identified to be at high risk of infection nor alters previous recommendations for post-exposure prophylaxis for hepatitis B. However, in the long term, universal infant vaccination would eliminate the need for vaccinating adults and adolescents at high risk.

Table 1. Current ACIP schedule for hepatitis B vaccine

Option #1	Age of Infant
Dose 1	Birth (before hospital discharge)
Dose 2	1-2 months
Dose 3	6-18 months
Option #2	
Dose 1	1-2 months
Dose 2	4 months
Dose 3	6-18 months

Inside this Issue...

Page	
2	<i>E. coli</i> Reportability
3	Alternatives to Streptomycin
4	Postsurgical Infections
5	1991-92 Influenza Summary
9	EM Rash Study in Missouri
10	Radon Awareness
12	HIV/AIDS Surveillance
15	Drug Resistant Tuberculosis

Immunization Action Plan

Mary Ann Harder, R.N.
Bureau of Immunization

The current vaccine delivery system is failing to protect those most at risk. This is indicated by recent measles epidemics and deaths nationwide despite the availability of a measles vaccine for the past 29 years. Since 1989, the Centers for Disease Control (CDC) has received reports of over 50,000 measles cases and 160 measles-related deaths. In 1990, nearly half of all measles cases occurred in children younger than five years old.

The CDC has received \$46 million for distribution as supplemental awards to immunization programs to ensure that vaccines are available and administered to children under two years of age.

The goal is to have 90% of two-year-olds fully immunized by the year 2000. The most recent survey, conducted in 1991, indicates that only 43% of Missouri's children are age-appropriately immunized by their second birthdays.

These CDC supplemental grants will make funds available to local health agencies through the Bureau of Immunization, Department of Health, with the following unique features:

- For the first time, funds can be used to enhance service delivery.
- The amount of money awarded will be based on the overall quality of a long-range Immunization Action Plan.

- The amount of monies awarded in future years will depend on performance in implementing the plan.
- The Immunization Action Plan is to include the key providers of immunizations in an area as contributors as well as non-traditional partners from medical/social service agencies and the community-at-large.

Immunization Action Committees have met in each health district to address barriers to immunizations and make recommendations for the Immunization Action Plan in three broad categories of improving availability of immunization, improving management of immunization delivery, and conducting ongoing measurement of children's immunization status. Missouri's plan was delivered to CDC on July 17, 1992.

TB Walk/Fun Run

Vic Tomlinson, M.P.A.
Bureau of Tuberculosis Control

Missouri's first Walk/Fun Run to Eliminate Tuberculosis took place at the noon hour on Wednesday, April 1, 1992, in Jefferson City. In spite of cold and windy weather, 70 participants started at the Capitol Building and walked/ran 2010 meters, or one and one-fourth miles. This distance was selected because it could be accomplished during the course of the lunch hour. Also, the target date for the elimination of tuberculosis is the year 2010 and 2010 meters is one and one-fourth miles. Each registrant had an average of eight donors. This event served as a fundraiser for the American Lung Association of Eastern Missouri, as well as an excellent opportunity to educate the public about tuberculosis. A total of \$4,500 was raised for tuberculosis activities.

The planning for the TB Walk/Fun Run began in the fall of 1991. A committee of 20 members was formed, consisting

of individuals from both the public and private sectors. Much publicity was generated to promote the event, including an article in the local newspaper, articles in agency newsletters, and radio and television interviews.

Few expenses were incurred as a result of the contributions from businesses. Donated prizes from 16 businesses were incentives for participants to raise \$50 or more in order to be eligible for the drawing of these prizes. Prizes included dinners for two, lodging for two, cordless phones, oil and filter changes and two round-trip airline tickets. Additional businesses provided T-shirts for the participants, lunches and beverages and the costs of printing fliers and posters. There was much community involvement and levels of awareness were raised regarding tuberculosis.

For additional information concerning the TB Walk/Fun Run, please contact the Bureau of Tuberculosis Control at (314) 751-6122.

E. coli O157:H7 Made Reportable

E. coli O157:H7 was made reportable effective June 25, 1992. Physicians and laboratories are encouraged to report suspected or confirmed *E. coli* O157:H7 infections and to send suspected isolates to the State Public Health Laboratory for confirmation.

Missouri is one of four states requiring reporting of *E. coli* O157:H7. The other states are Washington, Minnesota and North Dakota. Though not reportable for 1991 or early 1992, 23 isolates were sent to the State Public Health Laboratory in 1991. Ten have been sent through June 1992.

E. coli O157:H7 is a bacterium responsible for gastrointestinal illness with bloody diarrhea as a common symptom. Hemolytic uremic syndrome (HUS) is a serious complication of infection with *E. coli* O157:H7.

Alternatives to Streptomycin

Reprinted with permission from the Texas Preventable Disease News, February 8, 1992, Vol. 52, No. 3.

Streptomycin has not been available for purchase in the United States for several months now. A critical raw ingredient imported from France for the manufacture of streptomycin does not meet FDA requirements for the manufacture of drugs intended for human use. Reportedly, the ingredient could be processed in the U.S. to bring it up to FDA standards, but the company has not been willing to make that effort, given the relatively small market for streptomycin. This kind of problem could occur with any of the drugs commonly used for tuberculosis treatment. The CDC was invited to testify before a congressional hearing on this subject on December 18-19, 1991. With continuing effort, this and future drug supply problems will be alleviated.

In the interim, the following alternatives should be considered when streptomycin is indicated. As always, actual drug regimens and dosages depend on clinical judgment. In general, choice of drug regimens, including streptomycin or its substitutes, should be predicated on the results of drug susceptibility testing.

Tuberculosis

If streptomycin is indicated for the treatment of tuberculosis, the suggested substitute is capreomycin. The drug has slightly less ototoxicity and nephrotoxicity than other acceptable alternatives such as amikacin or kanamycin. Some clinicians may have more experience with and prefer using kanamycin in pediatric patients. Capreomycin or kanamycin should be used just as streptomycin would be used in patients under 50 years of age, at a dose of 15-30 mg/kg/day (maximum daily dose 1 gram) daily or five days per week initially. Biweekly dosing may be used when clinically indicated.

Reduced doses—10 mg/kg/day (maximum daily dose 750 mg)—should be used in persons over 50 years of age because of increased risk of toxicity in older patients. Markedly reduced doses and frequency of administration should be used in patients with renal insufficiency. Whenever feasible, serum drug levels should be monitored in these categories of patients, with drug dosage based on the measured drug levels.

Mycobacterium avium Disease

Streptomycin is indicated for the initial treatment of pulmonary *M. avium* disease in HIV negative patients. The appropriate substitute drug is amikacin, at the dosages given below.

Disseminated *M. avium* disease in HIV positive patients should include amikacin

rather than streptomycin in the initial regimen. The recommended dose is 10 mg/kg/day (maximum daily dose 750 mg) daily or five days per week. Because of increased risk of toxicity, reduced doses should be used in persons over 50 years of age or with renal insufficiency. Tests to determine serum levels of amikacin are routinely available and should be used to determine drug dosages for all persons in these categories.

The Missouri Department of Health no longer provides medications for the treatment of mycobacteria other than tuberculosis. For further information, contact the Bureau of Tuberculosis Control at (314) 751-6122.

Update: Availability of Streptomycin and Para-Aminosalicylic Acid in the United States

Since April 1992, streptomycin (SM) and para-aminosalicylic acid (PAS) (antimicrobial agents used in the treatment of tuberculosis (TB)) have been available through CDC under an investigational new drug agreement for the treatment of patients with multidrug-resistant tuberculosis. SM will now be made available for use in the drug-treatment regimen of any patient with active tuberculosis. This announcement updates and supersedes the previous notice¹ on availability of SM. Eligibility criteria for PAS remain unchanged. Clinicians interested in obtaining SM or PAS for their patients should provide an abbreviated medical history and, for SM, a recent creatinine serum level measurement. These drugs are expected to become commercially available in the United States later this year. Until then, requests should be directed to CDC's Clinical Research Branch, Division of Tuberculosis Elimination, National Center for Prevention Services; Ph: (404) 639-2530.

REFERENCE

1. CDC. Availability of streptomycin and para-aminosalicylic acid—United States. MMWR 1992;41:243

Postsurgical Infections Associated with Nonsterile Implantable Devices

Reprinted from Centers for Disease Control Morbidity and Mortality Weekly Report (MMWR), April 17, 1992, Vol. 41, No. 15.

Two recent cases of postsurgical infection reported to CDC occurred after the implantation of devices labeled and sold as nonsterile. Although there was no evidence that the infections resulted from the implants, these occurrences serve as reminders of the importance of monitoring the sterility of implants.

Because manufacturers may supply implantable devices such as orthopedic (e.g., hip prostheses), cardiovascular (e.g., cardiac valve grafts), and neurologic (e.g., shunts) devices as nonsterile, hospital personnel must ensure that nonsterile devices are adequately sterilized before implantation. The sterilization process used for an implantable device should be closely monitored and documented in the patient's medical record, including the sterilization method; the duration of exposure to the sterilization agent; conditions such as pressure, temperature, chemical concentration, date, time, and biological monitors; and other process indicators.

Steam or ethylene oxide sterilization is recommended for sterilization of implantable devices¹. Specific manufacturer recommendations for sterilization of the device should be available in the product packaging; if they are not, hospital personnel should contact the manufacturer for sterilization recommendations to be sure that the sterilization method to be used will not adversely affect device safety and performance. If the information is not available in the product packaging and recommendations cannot be obtained from the manufacturer, the device should not be used.

Adverse effects associated with implantation of implantable devices received from the manufacturer as nonsterile must

be reported to the manufacturer, who must report the event to the FDA by mail (Center for Devices and Radiological Health, FDA, FDA User Report, P.O. Box 3002, Rockville, MD 20847-3002) or by fax at (301) 881-6670. User facilities must report deaths related to implanted devices or adverse effects when the manufacturer is unknown directly to the FDA at the above address or by fax at (301) 427-1967. To ascertain the extent of complications resulting from infections associated with implantable devices labeled as nonsterile, hospital personnel are requested to report these events through state health departments to CDC's Hospital Infections Program, National Center for Infectious Diseases.

Reported by: Center for Devices and Radiological Health, Food and Drug Administration, Hospital Infections Program, National Center for Infectious Diseases, CDC.

REFERENCE

1. Garner JS, Favero MS. Guideline for handwashing and hospital environmental control, 1985. *Am J Infect Control* 1986;14:110-29.

Editorial Note: To report these events in Missouri, call the Department of Health at (800) 392-0272.

Missouri Department of Health Expands Recommendations for Administering Immune Globulin

Health care providers are encouraged to administer IG to any travelers who say they are planning to visit people who have hepatitis A, even if the visit is to another location in the United States or in Missouri. This expanded recommendation comes as a result of an increase in hepatitis A in several areas in Missouri. Every effort is being made to track cases, administer immune globulin (IG) to contacts of cases, and to restrict infected foodhandlers. Such travelers should also be taught how to prevent transmission, with special emphasis on handwashing and other hygienic practices.

It is standard procedure to administer IG to contacts of cases within 14 days of exposure, and to travelers before they go to high risk areas outside of the United States. The standard dosage is 0.02 ml/kg or 2 ml for adults. The Missouri Department of Health is expanding these recommendations to include IG for anyone planning to travel to known focal points of hepatitis A within the United States where they will be associating with infected persons.

1991-92 Influenza Summary

Irene Donelon, R.N.
Bureau of Communicable Disease Control

The 1991-92 influenza season in Missouri was characterized by early onset with peak activity in December 1991. There were 357 culture confirmed cases of influenza reported in Missouri during the 1991-92 season. Of these, 356 (99.7%) were type A, with 190 subtyped as A (H3N2) and 9 subtyped as A (H1N1); one type B was reported in early March.*

Statewide reports of influenza-like illness peaked during week 50 with pneumonia and influenza deaths peaking during week 52 (See Figures 1 and 2). Pneumonia and influenza deaths were above the previous 8 year average for a continuous 10 week period (11/91 to 1/92), and again during weeks 10 and 11 (3/92). Historically, death rates are higher in seasons with A (H3N2) as the predominant strain.

The first outbreak was reported in a school during the week of November 3, 1991 with 34% absenteeism. A total of 34 school districts, all located in Northeastern, Northwestern and Southeastern districts, reported outbreaks and 23 of the schools closed for brief periods of time. All outbreaks occurred between November 3 and December 21, 1991, and three of the outbreaks were confirmed as type A (H3N2). One college in St. Louis County reported an outbreak of confirmed A (H3N2) during the week of November 17, 1991. Two nursing home outbreaks were reported, one in Independence (Northwestern District) and one in Boone County (Central District). Both were confirmed as type A (H3N2). There was one unconfirmed outbreak reported in a daycare center.

In general, Missouri's influenza season followed the nationwide pattern of early peak activity followed by a rapid decline.

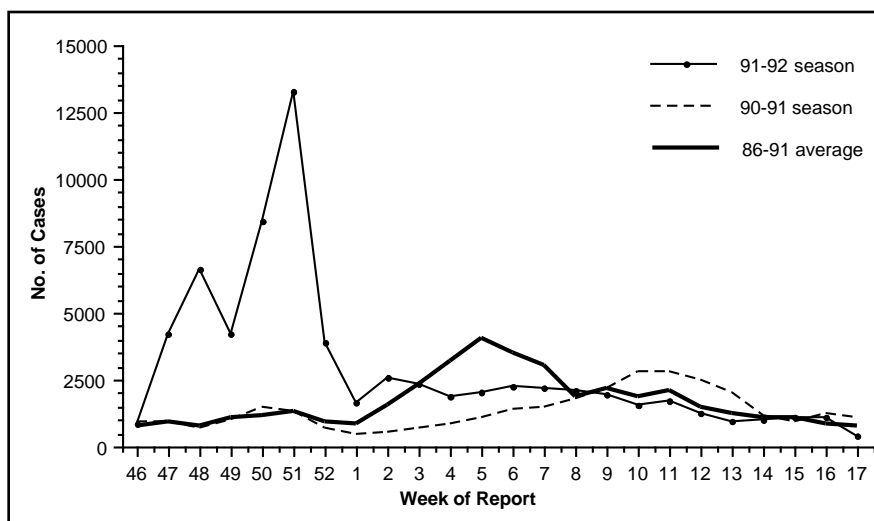


Figure 1. Influenza-like illness by week of report, Missouri, 1991-92, 1990-91 and 1986-91 average

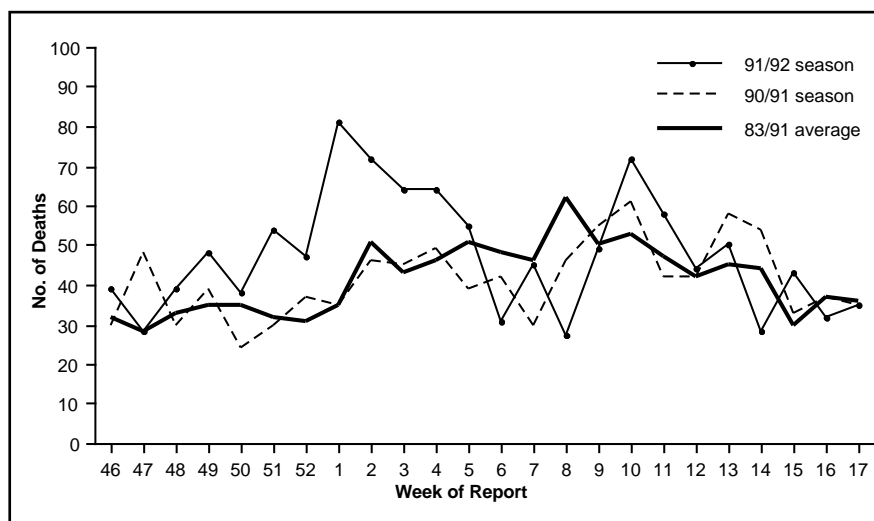


Figure 2. Pneumonia and influenza deaths by week of report, Missouri, 1991-92, 1990-91 and 1983-91 average

The Department of Health extends its gratitude to all physicians who participated in this year's influenza laboratory surveillance project.

*The Missouri State Public Health Laboratory initially identified the A (H3N2) strain as Beijing, the A (H1N1) as Taiwan, and the B as Panama. Eleven isolates were sent to CDC where more extensive antigen studies were performed. Eight of the nine initially identified as A/Beijing were identified as A/Brazil, A/Shanghai and A/Washington; all are antigenically closely related to

A/Beijing. One isolate initially identified as A/Taiwan was identified as A/Texas which is related to A/Taiwan. The one isolate initially identified as B/Panama was identified as B/Qingdao which is closely related to B/Panama. While the current vaccine would have been protective for all strains identified above, the vaccine for the 1992-93 season has been modified to include A/Texas/36/91-like (H1N1). The other components remain the same as the 1991-92 season: A/Beijing/353/89-like (H3N2) and B/Panama/45/90-like.

Coalition Goal is Elimination of Tuberculosis

H. Denny Donnell, Jr., M.D., M.P.H.
Office of Epidemiology

Vic Tomlinson, M.P.A.
Bureau of Tuberculosis Control

Joan Schlanker, M.S., R.N., is a district nurse consultant and district tuberculosis coordinator for the Northeastern District, Missouri Department of Health. She also serves as the tuberculosis nursing consultant to the department's Bureau of Tuberculosis Control. Joan has represented the American Nursing Association (ANA) at meetings of the National Coalition to Eliminate Tuberculosis. Schlanker was one of 80 persons representing 59 organizations at the January 1992 meeting of the coalition in Washington, DC. The four objectives of this coalition are:

1. Ensure that health care providers, especially those who practice in communities heavily affected by TB, are knowledgeable about the diagnosis, treatment and prevention of the disease.

2. Increase public awareness, especially in heavily affected communities, of the magnitude of the tuberculosis problem in the United States.

3. Advocate for adequate public and private response to achieve TB elimination.

4. Encourage non-governmental organizations, especially those working at the grass roots level, to commit to the elimination of TB and to support their efforts in this endeavor.

In order to address these objectives, a steering committee was developed to design strategies to implement them. Thirty-one organizations (including ANA) expressed interest in serving on the committee which met in March. The committee is concentrating its efforts in the areas of professional education, educating the public, education of policy makers and education of community-based organizations. Recommendations and action steps are being developed.

Joan reported to the American Nursing Association in an article in the March, 1992 issue of the *American Nurse*. The following two paragraphs are quoted from her article.

A tuberculosis case rate of less than one per million people by the year 2010 is the goal set by the Centers for Disease Control (CDC) to guide nationwide tuberculosis elimination efforts. Based on the U.S. Census Bureau projection of 282,056,000 people, the United States would have 282 tuberculosis cases if this goal is met.

For three decades, tuberculosis has been a preventable and curable disease. Yet, in 1990, 25,701 cases were reported in the United States. It is estimated that an additional 10 to 15 million Americans are infected with the tubercle bacillus, with a lifetime risk of developing active tuberculosis.

New Address and Phone Numbers

Southwestern District Health Office

(new address and phone number)

**1414 West Elfindale
Springfield, MO 65807
(417) 895-6900**

Southeastern District Health Office Poplar Bluff, MO

(new phone number)

(314) 686-9720

Please take time to make these corrections on the map showing DOH district offices which was published on page 12 of the January-February issue of the *Missouri Epidemiologist*. Please feel free to contact your district health office regarding public health concerns.

Newborn Screening— Two Million Infants Tested and Counting

On April 6, the State Public Health Laboratory hosted a celebration of the screening of the two millionth baby for metabolic diseases since the program started in 1965. Governor John Ashcroft congratulated the newborn screening program on its success in preventing mental and developmental disabilities. Lisa Wilson, who was identified as having phenylketonuria (PKU) by the program, read a proclamation from Governor Ashcroft commemorating the event and honoring Dr. Robert Guthrie who attend the event. Dr. Guthrie, a native of Missouri, developed the first screening test for PKU. That test is still in use today in many programs throughout the country, including Missouri. Over 750 newborns in Missouri have been diagnosed with PKU, hypothyroidism, galactosemia or hemoglobinopathies since this program began. The program generates an annual medical savings of \$50,000,000.

Bimonthly Morbidity Report, March/April 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Bimonthly Morbidity Report, March/April 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Investigation of Erythema Migrans Rash in Missouri

Michael Fobbs, B.A.

Bureau of Communicable Disease Control

In June 1991, the Missouri Department of Health requested assistance from the Centers for Disease Control (CDC) to determine if cases of Lyme disease reported in Missouri represented infections with *Borellia burgdorferi* or some other phenomenon.

As was previously reported in the January/February 1992 issue of the *Missouri Epidemiologist*, studies were conducted by an epidemiological investigation team consisting of Epidemic Intelligence Service (EIS) officers and other personnel from the Division of Vector-Borne Infectious Diseases, CDC, in addition to personnel from the Bureau of Communicable Disease Control, the Southeastern District Health Office, the Office of Epidemiology, the Cape Girardeau County Public Health Center and the Family Physicians Group of Cape Girardeau, MO.

Cases were defined as Missouri residents who had physician-observed erythema migrans (EM) rash greater than 5 cm in diameter with onset between May 1, 1990 and July 7, 1991. Sixty patients were identified who were diagnosed with EM within sixty days after onset of illness.

Cases reported few symptoms other than the EM rash. Influenza-like illness was rarely reported, though cases were significantly more likely than controls to report stiff neck and/or fatigue.

The EM rash ranged from 5 to 14 cm with a median of 8 cm and was seen by the physician 0-31 days after onset of illness. Tick bites preceding the rash were reported by 20 cases (44%). Of the 20 patients who recalled a tick bite preceding the rash, onset occurred 0-42 days after the bite, with a median of 3 days. Expansion of the rash was re-

ported by 12 patients, taking from 2-20 days to reach its largest size. None of these patients reported multiple EM lesions.

A case control study was conducted using the forty-five cases who responded to a telephone survey. Controls were chosen using a random digit dialing system and were matched with cases by telephone prefix. Ages of the cases ranged from 3 to 84 years with a median of 37 years. Ages of the controls ranged from 4 to 84 years with a median of 40 years. There was a higher proportion of females among the controls than the cases. Onset of illness occurred from April to October for both 1990 and 1991. July was the most common month of onset in 1990 and May was most common in 1991.

Cases were more likely than controls to reside in a rural or less populated area, to live near a lake, and to hunt. There was no significant difference between cases and controls in frequency of tick attachment during the month preceding the case's illness.

Serological specimens from 37 EM patients were tested by CDC. Fifteen of the thirty-seven (40.5%) were positive by the standard whole cell sonicate ELISA for antibody to *B. burgdorferi*. Specimens were also tested using a new ELISA being developed by CDC for antibodies against flagellar proteins from *B. burgdorferi*. Two (5.4%) were positive using this test.

Patients with EM were asked to name locations where they might have been exposed to ticks. Over 3,400 ticks were collected at 25 of these sites. *Amblyomma americanum* comprised 75 percent of the sample collected. No *Ixodes* species were collected. Motile spirochetes were observed in six (4.5%) of 133 field collected *A. americanum* nymphs under darkfield microscopy. These spirochetes

stain variably using a direct fluorescent antibody specific to *B. burgdorferi*.

Efforts to grow an organism in Barbour Stoenner Kelly II (BSKII) and other media failed. The cultures were found to be contaminated with a *Bacillus* and bundles of flagellar material initially thought to represent spirochetes in successive passages in culture were later recognized to be "pseudospirochetes."

Physicians in Missouri seeing EM rash patients are encouraged to continue to submit specimens for culture. Modified BSKII will be used in continuing culture studies. Physicians wishing to participate in culture studies should contact their local health department or their district communicable disease coordinator (see the January-February 1992 issue of the *Missouri Epidemiologist*) or the Bureau of Communicable Disease Control at (314) 751-6113 or (800) 392-0272.

Editorial Note: Attempts to grow spirochetes in culture from ticks collected in southeast Missouri during the 1991 Lyme studies have been unsuccessful. Additional tick collections are being made in 1992 for continuing studies. Initial efforts grew and passaged what appeared to be spirochetes, but these would not grow in uncontaminated cultures and did not demonstrate normal spirochetal motility. The CDC Laboratory at Ft. Collins has confirmed that these were "pseudospirochetes," actually bundles of flagellar material from a contaminant *Bacillus*. Similar pseudospirochetes have been found in other studies. The motile spirochetes observed in tick midgut preparations under darkfield microscopy will be examined with electron microscopy in the 1992 study. Additional efforts will be made to culture spirochetes from Missouri ticks.

Awareness of Radon Lacking in Missouri

Marina Cofer-Wildsmith
American Lung Association
of Eastern Missouri

One of the most dangerous health hazards in our community is completely invisible. It is odorless, colorless radon gas—the second leading cause of lung cancer, and the leading cause among non-smokers. Radon gas has been estimated to cause thousands of lung cancer deaths each year in the nation.

Radon emerged into the public spotlight in late 1984, when the discovery of extremely high radon was made in the Reading Prong area of Pennsylvania, New Jersey, and New York. The government quickly responded to this problem by creating the Radon Program in 1985 to help states and homeowners reduce the health risks due to radon. The Environmental Protection Agency's Radon Program is non-regulatory and is designed to provide public information and technical assistance to enable citizens to make informed decisions on how they should protect themselves. As a complement to the federal radon program, the American Lung Association joined the efforts to educate the community about the lung cancer risks associated with high levels of radon gas exposure. The American Lung Association of Eastern Missouri has been providing radon awareness programs for the last two years.

If a home has high levels of radon, a family may be exposed to as much radiation as having hundreds of chest x-rays every year. But because radon is impossible to see and smell, homeowners tend to ignore the possibility that it might exist in their homes.

Statistics show that as many as 18 percent of the homes in eastern Missouri have elevated levels of radon. That is approximately one in six homes. Further testing, however, is needed to continue research on the risks associated with radon in Missouri.

Radon has not received substantial, long-term coverage by the news media in Missouri. This may be a result of low interest on the part of media in a condition where there is no "villain" such as an industry responsible for the toxic release into the environment. Cumulative, long-term effects decrease the perception that the affected person is a "victim." No industry emits or spills radon into the environment and radon's lethal effects are chronic rather than acute.

The public seriously underestimates the importance of radon as a cause of cancer. In a Roper poll reported early in 1988, Americans rated radon second lowest of 28 health threats, just ahead of microwave ovens. Almost half the people surveyed said radon posed little or no risk. However, the fact is this radioactive gas is blamed for causing more lung cancer deaths than any other single pollutant except tobacco smoke. According to the Environmental Protection Agency (EPA), some 14,000 Americans die each year because of radon-induced lung cancers. However, this number could range from 7,000 to 30,000 deaths per year (See Figure 1).

Despite the risk, most governments have not taken direct regulatory responsibility for radon control. They have assessed radon risks and advised the pub-

lic on appropriate actions. Beyond that, however, it is primarily up to individuals to investigate and solve their own radon problems.

Testing is easy and mitigation is usually not difficult. The hard part is creating interest. In fact, most people have done nothing. There have been brief increases in testing usually in response to media publicity. Thus the news media have been shown to have an important role in helping the public to protect themselves when radon risks, along with other environmental risks, are explained and put in proper perspective. This emphasizes the news media's role in educating the public to protect themselves.

The American Lung Association of Eastern Missouri will be making extensive efforts to gain media attention during the next year. The public depends on the media for their understanding of environmental risk issues. We will also continue our community awareness programs and can only hope that, in time, the Missouri response to testing for radon will increase.

Recently the EPA produced a new *Citizen's Guide to Radon*. The American Lung Association will be making this document, as well as numerous other briefing papers and pamphlets on radon gas, available to the community. Vari-

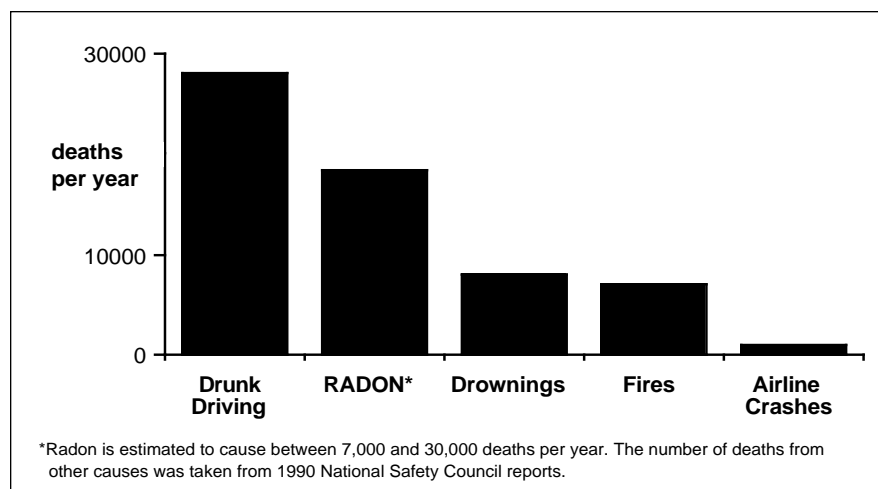


Figure 1. Radon contributes to thousands of deaths each year

ous community programs will continue and expand this year. One program is a curriculum for elementary schools that can be utilized to teach children about various indoor air pollutants. Other educational tools include a patch program for the scouts that provides information about radon, and a community presentation kit. A new *Physician's Guide to Radon* will also be made available this fall.

The EPA and American Lung Association of Eastern Missouri recommend the following:

- **Test your home for radon—it's easy and inexpensive.**

Administer a short term test (2 to 90 days in duration). Test kits should be placed in the lowest lived-in level of the home. However, not in a kitchen or bathroom. A testing kit can be purchased at your local hardware store, grocery store or through the American Lung Association of Eastern Missouri.

- **Fix your home if your radon level is 4 picocuries per liter (pCi/L) or higher.**

The American Lung Association can be used as a resource to determine what steps need to be taken to fix your home. Follow up the short-term test with a long-term test (90 days to 1 year in duration) or a second short-term test. For a better understanding of your year-round average radon level, administer the long-term test. If you need results quickly, take a short-term test.

- **Radon levels less than 4 pCi/L still pose a risk, and in many cases, can and should be reduced.**

Most homes can have their radon levels reduced to 2 pCi/L or below. The cost for an average home to be fixed by a contractor is about \$1,200, although this can range from about \$500 to \$2,500. Be sure your contractor is certified by the

RADON RISK IF YOU SMOKE

Radon Level	If 1,000 people who smoked were exposed to this level over a lifetime...	The risk of cancer from radon exposure compares to...	WHAT TO DO Stop smoking and...
20 pCi/L	About 135 people could get lung cancer	← 100 times the risk of drowning	Fix your home
10 pCi/L	About 71 people could get lung cancer	← 100 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 57 people could get lung cancer		Fix your home
4 pCi/L	About 29 people could get lung cancer	← 100 times the risk of dying in an airplane crash	Fix your home
2 pCi/L	About 15 people could get lung cancer	← 2 times the risk of dying in a car crash	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	About 9 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L	About 3 people could get lung cancer	(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be lower.

RADON RISK IF YOU'VE NEVER SMOKED

Radon Level	If 1,000 people who never smoked were exposed to this level over a lifetime...	The risk of cancer from radon exposure compares to...	WHAT TO DO:
20 pCi/L	About 8 people could get lung cancer	← The risk of being killed in a violent crime	Fix your home
10 pCi/L	About 4 people could get lung cancer		Fix your home
8 pCi/L	About 3 people could get lung cancer	← 10 times the risk of dying in an airplane crash	Fix your home
4 pCi/L	About 2 people could get lung cancer	← The risk of drowning	Fix your home
2 pCi/L	About 1 person could get lung cancer	← The risk of dying in a home fire	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	Less than 1 person could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L	Less than 1 person could get lung cancer	(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be higher.

EPA's Radon Contractor Proficiency Program (RCP). A contractor who has passed the EPA test will carry a special RCP identification card.

For details of what the American Lung Association of Eastern Missouri can provide, contact the author at (314) 645-7128.

The Bureau of Radiological Health of the Missouri Department of Health has speakers available for educational activities and can provide publications pertaining to radon. The bureau anticipates working with the American Lung Association on community awareness programs. The Bureau of Radiological Health can be reached at (314) 751-6083 or (800) 669-7236.

The Completeness of HIV/AIDS Surveillance in Missouri

Deborah Scott
Bureau of AIDS Prevention

Disease reporting is a cornerstone of public health. It is the most important tool at our disposal to analyze trends in epidemic disease and to direct prevention activities to control the spread of disease. Active disease surveillance is necessary to ensure that the HIV epidemic can be appropriately described and public health efforts may be effectively targeted. The effectiveness of HIV/AIDS surveillance in serving these objectives is dependent upon its completeness. Another importance of complete reporting is the reality that federal funds for services are distributed among the states in direct proportion to the reported disease.

Acquired Immunodeficiency Syndrome (AIDS) has been a reportable condition under section 192.020, RSMo (1986) and Missouri's general communicable disease reporting rule (19 CSR 20-20.020) since 1983. Reporting of HIV seropositive status by name became an additional reporting requirement on October 25, 1987. On June 1, 1988, section 191.653, RSMo (Cum. Supp. 1990) strengthened the Department of Health's rule when it mandated that the identity of HIV seropositive individuals be reported to the department. Named reporting of HIV/AIDS is the responsibility of the attending physician or his/

her designee. Reporting of HIV infection is also the responsibility of any other site authorized to perform blood sampling for the purpose of HIV testing (e.g., counseling and testing sites), blood banks, etc. Laboratories are also required by 19 CSR 20-20.080 to report any test that is positive for or suggestive of HIV infection or AIDS. Therefore, under current law and rule, an HIV-infected individual must be reported to the Missouri Department of Health, Bureau of AIDS Prevention (BAP), by name, when testing positive for HIV, and again when he/she meets the case definition for AIDS.

To assess the completeness of surveillance efforts to obtain morbidity reports on HIV and AIDS cases, the Bureau of AIDS Prevention performs validation studies utilizing death certificate and hospital discharge data.

Death Certificate Validation Study

Death certificates filed with the Department of Health for persons who died from HIV/AIDS-related conditions are utilized to evaluate the completeness of case reporting. Evaluation of certificates filed during the first quarter is deferred for three months so that the effectiveness of active surveillance techniques and passive reporting can be ascertained. During the first quarter of 1991 (Janu-

ary 1, 1991 thru March 31, 1991), 115 certificates were determined to be HIV related. Eighty-eight had been previously reported in Missouri and 21 had been reported in other states. Six cases were identified which had not been previously reported. This validation study indicates the reporting of AIDS cases is 94.8% complete, i.e., 109 of 115 previously reported (See Quarter I in Table 1).

During calendar year 1991, a total of 418 death certificates were determined to be HIV-related. Seven certificates are pending. Therefore, the maximum number of certificates that could possibly have been HIV related was 425. Of this cohort, 326 had been previously reported as AIDS cases in Missouri and 63 were previously reported cases in other states, i.e., a total of 389 of the 425 certificates had already been reported as AIDS cases. The minimum completeness of AIDS case reporting as measured by this study was 91.5% (389/425) (See Table 1).

Hospital Validation Study

In 1991, a validation study was performed on discharge data from selected Missouri hospitals. Out of 387 patients with HIV/AIDS-related conditions, 268 had been reported to the Missouri Department of Health or another state health department. Of the remaining 119 patients, 108 did not yet meet the AIDS case definition and 11 were determined

Table 1. Quarterly summary of death certificate dispositions, Missouri, 1991

Quarter	No. of Certificates	Adm. Closed	Balance	Reported Missouri	Reported Other State	New Case Missouri	New Case Other State	Not Case	Pending
1	128	10	118	88 74.6%	21 17.8%	6 5.1%	0 0%	3 2.5%	0 0%
2	105	24	81	60 74.1%	12 14.8%	7 8.6%	1 1.2%	1 1.2%	0 0%
3	133	28	105	76 72.4%	12 11.4%	7 6.7%	0 0%	8 7.6%	2 1.9%
4	166	32	134	102 76.1%	18 13.4%	7 5.2%	1 .8%	1 .8%	5 3.7%
YTD	532	94	438	326 74.4%	63 14.4%	27 6.2%	2 .5%	13 3.0%	7 1.6%

Table 2. AIDS reporting validation summary of selected hospital discharge data, Missouri, July 1991

HIV/AIDS Related Discharges	Previously Reported/ Missouri	AIDS Status Unknown/ Not Reported	New Missouri AIDS Cases	Previously Reported Other States	Not AIDS	Pending	Percent Reporting Completeness
387	251	136	11	17	104	4	96.1%

to be unreported AIDS cases. Based on this validation mechanism, AIDS case reporting was 96.1% complete (See Table 2).

Summary

These analyses indicate that reporting of HIV and AIDS in Missouri is over 90% complete. Since 1985, the Bureau of AIDS Prevention has been funded by the Centers for Disease Control (CDC) to perform active AIDS case surveillance. In 1991, Missouri was the recipient of the first funds ever allocated by CDC to perform active HIV surveillance. Resources are now available to perform active HIV surveillance in Missouri. In the past, the majority of AIDS case reporting has come from specific hospitals that are seeing the majority of clients on an inpatient basis. As more clinicians are caring for HIV-infected clients as outpatients, the surveillance of HIV/AIDS must shift to outpatient clinics and physician offices.

Complete reporting for HIV/AIDS poses significant challenges for public health which include the continued increase in the number of cases, the shift from inpatient to outpatient care for persons with AIDS, the complexity of the case definition and the limitation of resources available to perform active disease surveillance. In 1992, the CDC plans to expand the AIDS case definition to add the presence of a CD4+ lymphocyte count $<200/\text{mm}^3$ to present criteria. This will broaden the number of HIV-infected persons defined as having AIDS because the diagnosis will be made earlier in the course of the disease. In anticipation of this change, the Missouri Department of Health formulated a rule that requires CD4+ lymphocyte counts on persons with HIV infection to be re-

ported to the department. This change was effective October 12, 1991.

As of June 30, 1992, the total number of named, HIV+ reports for Missouri residents was 4,503. T-Lymphocyte counts have been registered on 2,322 (52%) of these patients. Under the present criteria, there are 308 patients currently not classified as AIDS cases who have CD4+ counts below 200. These individuals would be reclassified as AIDS cases when the proposed case definition change becomes effective. This would be a one time reclassification of individuals already on record.

Roger Gibson Joins Bureau of Community Sanitation

Roger Gibson was appointed Chief, Bureau of Community Sanitation on August 3, 1992. He is a native of north-central and west Texas. He received a B.S. in food technology in 1976 from Texas Tech University in Lubbock, Texas and received a Master's of Public Health from the University of Texas in Houston in 1984. He worked for several years in the restaurant industry.

His public health career started when he became a sanitarian with the Lubbock Health Department in 1977. He inspected child care centers, swimming pools, and septic systems. He later inspected restaurants, grocery stores, warehouses, and bottling plants. He was a Texas Food Service Training Officer from February 1979 to January 1982.

He moved in September 1979 to Houston where the health department assigned him to the 5th Ward, one of the poorest, most disadvantaged ghettos in Houston.

Stratification of the HIV infected population by CD4 count has also allowed the Bureau of AIDS Prevention to estimate the minimum number of HIV-infected persons requiring medical intervention (based on present guidelines for the initiation of antiretroviral therapy and prophylaxis for *Pneumocystis carinii* pneumonia).

Because complete reporting more accurately reflects need, policy makers and public health officials can plan more effectively to provide resources that will allow HIV-infected Missourians to maintain the highest possible quality of life.

As a Sanitarian III Supervisor assigned to specialized inspections, he became a program developer, evaluator, and field tester for new programs. Some of these programs included Quality Assurance Self-Inspection Program, Hazard Analysis of Critical Control Points, Pushcarts (Park Vending Program), Food Managers Certification Program, Pre-opening Program, and Massage Program.

In February, 1988, he came to the Missouri Department of Health and was employed in the Bureau of Hospital Licensing and Certification as a Health Facilities Consultant where he contributed to the infectious waste legislation and program and the Health Department Earthquake Response Plan.

His wife is from Poplar Bluff. He has two daughters, aged 13 and 16, and a son, 10, from a previous marriage, who live in Houston. He enjoys reading, music, hunting, fishing, camping, cooking, gardening, and raising tropical fish.

Cholera Update

Irene Donelon, R.N.

Bureau of Communicable Disease Control

Cases of cholera have been reported from nearly all countries in Latin America since 1991. In March, the Centers for Disease Control (CDC) received unofficial reports of cases of culture-confirmed cholera in Monterrey, Mexico, 140 miles from the U.S. border. In April 1992, CDC received unofficial reports of two persons with culture-confirmed cholera who had recently arrived in Nuevo Laredo, Mexico from further south. Nuevo Laredo is on the U.S. border.

The appearance of cholera in northern Mexico or the Caribbean increases the likelihood that cases of imported cholera will be recognized in the United States as well, and necessitates heightened surveillance. Laboratories should be able to identify presumptive *V. cholerae* 01 isolates on TCBS agar and should understand the need for rapid reporting of cases to the local or state health department. Suspect isolates should be referred promptly to the State Public Health Laboratory for confirmation as *V. cholerae* 01, serotyping, and toxin testing. Although sustained transmission in the United States is extremely unlikely in populations served by municipal water and sewer systems, limited and localized outbreaks may occur among population groups with very poor sanitation.

The following steps can be taken to reduce the risk of cholera introduction and subsequent transmission:

1. Educate international travelers on how to avoid getting cholera. All travelers to areas where cholera has occurred should observe the following recommendations:
 - Drink only water that you have boiled or treated with chlorine or iodine. Other safe beverages include tea and coffee made with boiled water and carbonated, bottled beverages with no ice.

- Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.
 - Avoid undercooked or raw fish or shellfish, including ceviche.
 - Make sure all vegetables are cooked—avoid salads.
 - Avoid foods and beverages from street vendors.
 - Do not bring perishable seafood back into the United States.
2. Reinforce the need to maintain high water quality and disinfection standards. Surface waters in the Gulf Coast states, the Southwest, and U.S. protectorate countries in tropical or subtropical areas may be subject to conditions favoring the survival of *V. cholerae* 01. Persons using water sources in these areas should be especially alert for contamination.
 3. Reinforce concern for seafood safety. The United States has had occasional sporadic cases of cholera related to raw oysters and undercooked crabs from the U.S. coast of the Gulf of Mexico. During the summer of 1991, the Latin American strain of *V. cholerae* 01 was isolated from oysters harvested from a closed commercial bed in Mobile Bay from July through September. Cooking experiments using crabs inoculated with

the Gulf Coast strain of *V. cholerae* 01 have shown that it takes 30 minutes of steaming or 10 minutes of boiling to kill all *V. cholerae* 01.

4. Educate populations with extremely limited sanitation. Some populations with very poor sanitation could possibly experience limited transmission of cholera. Efforts to improve the safety of the water supply and sewage disposal in such populations and to have prevention messages ready are well advised.

Information on recognizing and treating cholera has appeared in previous issues of the *Missouri Epidemiologist*. If you need additional information, contact the Missouri Department of Health at (800) 392-0272.

REFERENCES

1. Centers for Disease Control. Update on *Vibrio cholerae* 01 and recommended prevention measures 1992.
2. Centers for Disease Control. Cholera in the nineties. *Current Issues in Prev Health* 1992;3:1-2.
3. Craun G, Swerdlow D, Taupe R et al. Prevention of waterborne cholera in the United States. *J of Amer Water Works Assoc* 1991;83:40-45.

Showcasing Child Health in Missouri

October 5, 1992

Ramada Inn, Columbia, MO

An exciting meeting has been planned for National Child Health Day. It will explore current child health needs and concerns in Missouri, highlight innovative approaches Missourians have taken to provide child health services, and feature intriguing research efforts. This conference will be an excellent time for sharing what is being done for Missouri's children. A major emphasis of the conference will be childhood immunizations, which is this year's theme for National Child Health Day.

**For complete agenda and registration form, call:
Division of Maternal, Child and Family Health
(314) 751-6172**

Infection Control Practitioners Can Access CDC by Phone

Hospital infection control practitioners now have a CDC voice information telephone system which allows callers to access information on nosocomial infections, including guidelines for prevention and control, disinfection of sterilization procedures, infection rates, and training.

The system is available 24 hours a day, 365 days a year.

Ph: (404) 332-4555

State Public Health Laboratory Report

Newborn Screening — Hypothyroidism, Phenylketonuria, Galactosemia and Hemoglobinopathies

James Baumgartner, B.S., M.B.A., Chief, Metabolic Disease Unit

	Mar 92	Apr 92	Total YTD
Specimens Tested	9,580	9,372	37,078
Initial (percent)	66.9%	70.3%	25,396
Repeat (percent)	33.1%	29.7%	11,682
Specimens: Unsatisfactory	164	94	487
HT Borderline	337	442	1,379
HT Presumptive	16	15	50
PKU Borderline	5	16	30
PKU Presumptive Positive	-	2	2
GAL Borderline	28	21	127
GAL Presumptive Positive	2	2	7
FAS (Sickle cell trait)	79	93	361
FAC (Hb C trait)	29	24	105
FAX (Hb variant)	14	18	60
FS (Sickle cell disease)	-	3	9
FSC (Sickle C disease)	2	-	3
FC (Hb C disease)	-	2	3

HT = Hypothyroidism, PKU = Phenylketonuria, GAL = Galactosemia, Hb = Hemoglobin, YTD = Year to Date

Low Incidence of Drug Resistant Mycobacterium Tuberculosis in Missouri

H. Denny Donnell, Jr., M.D., M.P.H
Office of Epidemiology

Resistant tuberculosis bacteria have been detected during the five year period 1987 to 1991 in 82 cases in Missouri. In 59 of these cases (72%) there was resistance to only one drug. Isoniazid (INH) resistance alone occurred in 44 cases, streptomycin (SM) resistance in 12 cases, rifampin (RIF) resistance in 2 cases and ethambutol resistance in 1 case. Resistance to two drugs occurred in 17 cases with 10 resistant to INH and SM, and 7 resistant to INH and RIF. Resistance to three drugs was seen in 5 cases, 3 of

which were resistant to INH, RIF, and SM, and 2 were resistant to INH, RIF, and rifabutin. One case in 1990 was resistant to INH, RIF, SM, pyrazinamide and rifabutin

Resistant bacteria emerge from time to time as the infection progresses and for this reason multiple simultaneous drugs are always used in the treatment of tuberculous disease. Recently strains have been seen in several other states which have been referred to as multiply-resistant tuberculosis because they have been resistant simultaneously to as many as seven drugs. Some of these have been

characterized by DNA typing and different strains have been identified in different areas. Strains with this extensive resistance have not yet been encountered in Missouri, but laboratory vigilance must be maintained to detect them early if they do arrive or emerge here. Patients must be monitored closely for adherence to therapeutic regimens and evidence that resistance is present.

Emergence of resistance is prevented by maintaining therapy with more than one drug to which the organisms are sensitive. A cardinal principle of TB therapy is never to add a single drug to a failing regimen.



Published by the
Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65102-0570

The *Missouri Epidemiologist* is a regularly scheduled bimonthly newsletter published by the Division of Environmental Health and Epidemiology of the Missouri Department of Health. The division's responsibilities include the prevention and control of communicable diseases and environmentally induced illnesses, including the requisite epidemiological investigations.

The Managing Editor is H. Denny Donnell, Jr., MD, MPH, State Epidemiologist, assisted by an Editorial Board including Bill Schmidt, MPH, Director, and Hilda Chaski, MPH, Deputy Director of the Division of Environmental Health and Epidemiology. Diane C. Rackers is the Production Manager. Questions or comments should be directed to (314) 751-6128 or toll free (800) 392-0272.

This newsletter can be recycled.



Upcoming Conference

THE BASICS OF INFECTION CONTROL

October 7-9, 1992

Capitol Plaza Hotel, Jefferson City, MO

Purpose

This three-day conference will begin to prepare healthcare professionals as resource persons and facilitators for prevention and control of the most common nosocomial infections.

It will also help the professional develop skills in managing the everyday responsibilities of infection surveillance, analysis of disease data, and solving infection control problems in the facility.

Contact Hours

Application has been submitted for contact hours for RN's, LPN's, medical technologists/microbiologists, and sanitarians.

Sponsors

Co-sponsored by the Missouri Department of Health and eight other organizations.

Registration

For complete agenda and registration form, call (314) 751-6115.

Tuberculosis in 1991: Concern for High-Risk Groups as Well as General Public

Vic Tomlinson, M.P.A.
Bureau of Tuberculosis Control

In 1991, 254 cases of tuberculosis were reported in Missouri for a case rate of 5.0 per 100,000 population. This represents a decrease of 58 cases (18.6%) over the previous year. It should be noted that the incidence of tuberculosis decreased by 53 cases, or (35.8%), in the major metropolitan areas of St. Louis City, St. Louis County and Kansas City. A decrease in morbidity in St. Louis County was anticipated since a large outbreak in an elementary school occurred there in 1990. In addition, decreases in morbidity in the major metropolitan areas may be attributed to access to tuberculosis clinical services in these areas and support received via the cooperative agreement with the Centers for Disease Control for outreach workers.

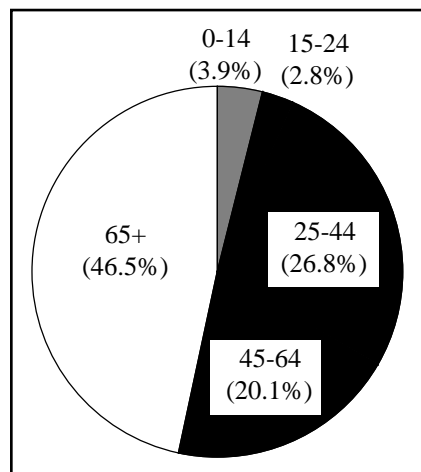


Figure 1. Tuberculosis cases by age, Missouri, 1991

In 1991, the incidence of tuberculosis decreased by 28.3% in St. Louis City and by 51.6% in St. Louis County. The incidence of cases decreased by 18.4% in Kansas City. In the outstate areas of Missouri, the incidence of disease decreased only by 3.0%. The outstate cases represent a major portion (62.6%) of the total cases. The percentage of total cases occurring in the outstate areas increased from 52.6% in 1990.

The percentage of tuberculosis cases occurring among the elderly (i.e., age 65 or older) continues to increase in Missouri. In 1990, 45.2% (141/312) occurred among individuals age 65 or older. In 1991, 46.5% (118/254) occurred among the elderly (See Figure 1). An increasing percentage of cases are occurring in the 25-44 age group. In 1990, 25.3% (79/312) occurred in this age group. In 1991, 26.8% (68/254) occurred in the same age group. The number of cases occurring in children under 15 years of age declined in 1991. Additional cases were reported in this age group in 1990 as a result of the outbreak in an elementary school in St. Louis County mentioned above. In 1990, 11.9% (37/312) of the cases occurred in children under 15 years of age. In 1991, only 3.9% (10/254) occurred in this age group.

In 1991, 67.3% of the cases occurred among whites, 25.2% among blacks and 7.5% among Asians (See Figure 2). This represents a decrease statewide in the

(continued on page 2)

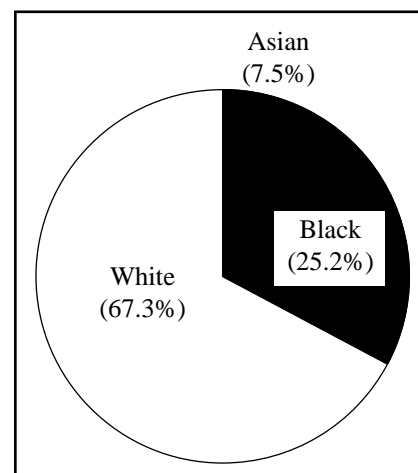


Figure 2. Tuberculosis cases by race, Missouri, 1991

Inside this Issue...

Page	
3	Shigellosis on the Rise
6	Communicable Disease 1991 Annual Report
12	Tick-Borne Disease Summary - 1991
14	1991 Rabies Summary
15	AIDS Prevention 1991 Report
16	Sexually Transmitted Diseases in 1991
18	Bureau of Environmental Epidemiology - FY92 Report
19	Hepatitis A Trends

(continued from page 1)

percentage of cases occurring among blacks from 34.3% in 1990 to 25.2% in 1991. While a decrease was noted in the incidence of disease among blacks, the percentage of cases occurring among Asians increased from 3.2% to 7.5%. In St. Louis City, the incidence of disease was greatest among minorities. Specifically, 63.6% of the cases occurred among blacks in 1991. This represents a decrease from 71.7% of the cases during 1990. In St. Louis County, the percentage of cases occurring among blacks decreased from 46.9% in 1990 to 29.0% in 1991. In Kansas City, the percentage of cases occurring among blacks continued to increase from 55.3% in 1990 to 61.3% in 1991. The rates of disease indicate that the state's minority populations are nearly four times as likely as whites to contract tuberculosis. The rate of disease among minorities statewide was 14.1 per 100,000 population in 1991. Specifically, the rate of disease among blacks was 11.7 and the rate among Asians was 46.0. In comparison, the rate of disease among whites was 3.8 per 100,000 population.

During 1991, 25 foreign-born individuals (9.8%) were reported with tuberculosis in Missouri. Of this number, 76.0% were from Asian countries, 8.0% were from one African country, 8.0% were from two Caribbean countries, 4.0% were from one South American country and 4.0% were from one Central American country. This represents an increase from 15 foreign-born individuals (4.8%) who were reported with tuberculosis in 1990.

A slight increase was observed in the number of cases that occurred in correctional facilities. During 1990, 11 cases (3.5%) were reported from state and federal correctional centers. In 1991, the number of such cases increased to 13 (5.1%). Screening efforts continued in this high-risk group during 1991. A mass tuberculin testing program was conducted at the Alcoa Correctional Center in May and August 1991 in response to

the high rate of tuberculous infection, 52.2% (12/23), that was discovered during April as part of routine physical examinations. The Department of Corrections and the Department of Health worked cooperatively on this testing effort. Nurses from both departments formed an effective clinical team to administer and read the skin tests. The results of the initial screening in May showed that 12.6% (152/1208) of the inmates were infected, 6.3% (26/411) of the staff were infected and one case of tuberculous disease was detected among the inmates. Chest x-rays, physician evaluation services and treatment were provided as part of the follow up services.

The relationship between tuberculosis and AIDS continues to be a growing concern. Of the 2,557 cases of AIDS reported among Missouri residents through 1991, a total of 49 individuals were reported with a diagnosis of tuberculosis as well. In addition, a total of 69 cases of mycobacterial disease other than tuberculosis were reported among AIDS patients. The most common mycobacteria isolated from these individuals is

the *M. avium* complex which was isolated from a total of 52 patients (75.4%).

Missouri was the second state, after Indiana, to require the reporting of tuberculous infection. This reporting requirement became effective in March 1991. A reporting card was developed and distributed throughout the state in July 1991. During this start-up year, 926 reports of infection were received. Of this number, 62% were found to be treated. The local health agencies were instrumental in the follow up of infection reports to determine if preventive therapy might be appropriate. As a result of follow-up efforts, 13 persons were started on treatment, three were given a longer duration of treatment than originally prescribed and nine were given shorter but adequate treatment regimens for their level of risk. Also, 31 persons were given treatment even though the initial report omitted that information. The reporting and follow up of tuberculous infection will prevent future cases of tuberculosis from developing. This approach will help Missouri attain the goal of tuberculosis elimination by the year 2010.

State Public Health Laboratory 1991 Report

Eric C. Blank, Dr.P.H.
State Public Health Laboratory

Virtually all diagnostic testing related to infectious diseases conducted by the State Public Health Laboratory (SPHL) is done in conjunction with Department of Health disease prevention and control programs. The work ranges from large-scale screening services, such as HIV antibody testing, to specialized testing for diseases of public health importance such as *Bordetella pertussis* and rabies.

The SPHL received and processed over 130,000 specimens related to the diagnosis of infectious diseases other than AIDS in calendar year 1991. No significant changes were made in the diagnostic testing services offered by the SPHL in 1991.

Table 1. Infectious disease specimens processed by State Public Health Laboratory, 1991

Microbiology	
Enterics	2,230
Gonorrhea	60,260
Parasitology	3,654
Reference	2,538
Serology	
HIV Antibody	178,863
Chlamydia	20,918
Syphilis	22,896
Virology	
Rabies	2,390
Hepatitis	7,146
Viral serology/ isolation	9,440

Shigellosis on the Rise, January-June, 1992

Mahree Fuller Skala, M.A.

Bureau of Communicable Disease Control

Shigellosis reporting in Missouri has increased threefold from 74 cases to 295 during the first half of 1992 compared with the same time period in 1991. This translates to a projected increase in the statewide annual rate from 5.1/100,000 population in 1991 to 11.5/100,000 in 1992. The largest increase has occurred in the Eastern District, where 30 cases were reported in the first half of 1991 and 178 cases in 1992 (See Figure 1). The Central and Southeastern districts have also seen dramatic increases.

Most of the 1992 cases are young children, and most are black. The median age declined from eight years in 1991 to five years in 1992, and the proportion of cases under age five has increased from 32.4% to 43.7% (See Figure 2). There has been a marked increase in the proportion of cases who are black, from 37.3% in 1991 to 57.6% in 1992. Among the 158 cases with species reported, *Shigella sonnei* accounts for the entire increase; other species have actually declined slightly during 1992.

These trends are also apparent in the Eastern District, which has reported 60.3% of the 1992 cases compared with 40.5% in the first half of 1991. Only 13.3% of the 1991 cases were less than 10 years old, compared with 46.1% in 1992. Of the 1992 cases, 57.1% are black, compared with 43.5% in 1991. Information regarding species is lacking in most cases.

This information is consistent with a recent report by the Centers for Disease Control (CDC) on hyperendemic shigellosis in the U.S. in 1987-88¹. The highest rates during that period were found in counties with relatively high proportions of urban, ethnic minority, and poor residents, the groups traditionally at highest risk for *Shigella* infection. More cases were reported in Missouri in 1988 than at any time during the past 15 years; the state rate was 11.9 /

100,000 population. The authors of the CDC report hypothesized that changes in population immunity to *S. sonnei* have increased the potential for periodic hyperendemic shigellosis.

The role of day care centers in shigellosis transmission in urban areas has been documented, most recently in Lexington-Fayette County, Kentucky². In a large outbreak there in 1991, 47% of the 111 initial cases of shigellosis in affected households were attributed to child day care center attendance. The age

distribution of Missouri cases indicates that young children are at highest risk of infection.

Since shigellosis is transmitted by the fecal-oral route, the most effective means of reducing transmission in child care settings is good hygiene, including:

- Consistent, rigorous handwashing practices for staff and children, especially after toileting, diapering, and before food handling or eating.

(continued on page 13)

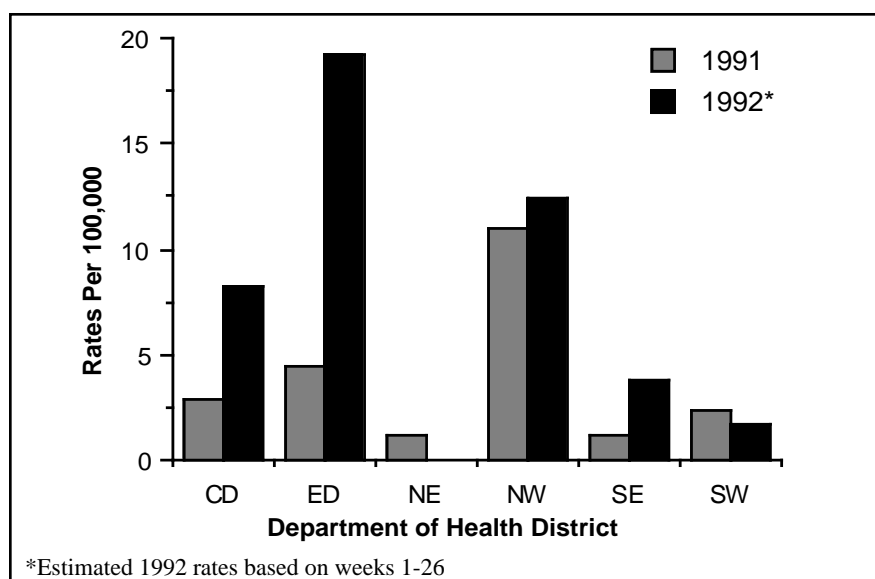


Figure 1. Shigellosis rates by district, Missouri, 1991 and 1992

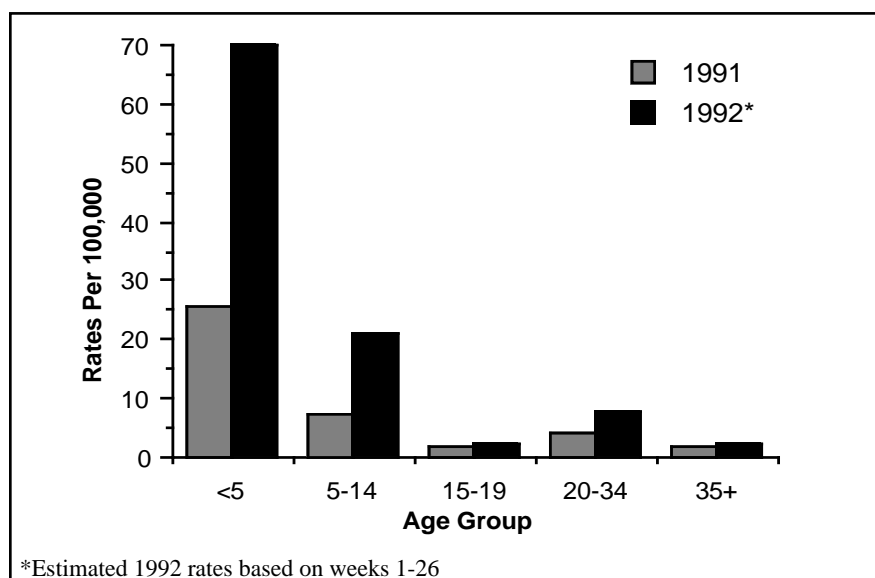


Figure 2. Shigellosis rates by age group, Missouri, 1991 and 1992

1991 Communicable Disease and Nosocomial Outbreaks

Michael Fobbs, B.A.

Mahree Fuller Skala, M.A.

Bureau of Communicable Disease Control

Community Outbreaks

There were 49 communicable disease outbreaks reported in Missouri communities in 1991, involving 1,532 cases. This represents an 8.9% increase from 45 such outbreaks reported in 1990. The 1991 outbreaks are shown in Table 1 by cause, setting and number of cases.

The largest single category of outbreaks was acute gastrointestinal illness of unknown etiology (AGI). Fifteen such outbreaks, involving 286 persons, were reported. The mode of transmission was foodborne in seven of these and waterborne in one. In seven outbreaks, the mode of transmission could not be substantiated; most of these were suspected to be due to person-to-person contact, but food vehicles could not be ruled out in three instances.

Hepatitis A was responsible for 11 outbreaks involving 115 people in a variety of settings, including one day care and one restaurant.

Various salmonella serotypes were responsible for six outbreaks comprising 170 cases. Five of the outbreaks were foodborne; in one the vehicle was not determined. *Salmonella braenderup* caused the largest foodborne outbreak, involving 91 cases exposed at a catered holiday dinner. Roast beef was the implicated vehicle.

The largest number of outbreak-related cases were caused by influenza or influenza-like illness, with 886 cases reported in five school outbreaks.

With respect to setting, the largest number of outbreaks (12 or 24.5%) represented spread within a particular community. This included six outbreaks of hepatitis A. Restaurants (8 or 16.3%) and schools (8 or 16.3%) were the next

Table 1. Communicable disease outbreaks by cause, setting and number of cases, Missouri, 1991

Disease	No. of Outbreaks	Setting	No. of Cases
AGI*			
Unknown vehicle	7	2C,CA,FG,R,2S	106
Foodborne	7	3CT,4R	118
Waterborne	1	O	62
AGI Totals	15	-	286
Hepatitis A	11	6C,DC,3O,R	115
Salmonella			
<i>S. braenderup</i>	1	CT	91
<i>S. infantis</i>	1	CT	28
<i>S. muenchen</i>	1	CT	13
<i>S. oranienburg</i>	1	C	15
<i>S. poona</i>	1	O	8
<i>S. typhimurium</i>	1	FG	15
Salmonella Totals	6	-	170
Influenza (confirmed)	1	S	500
Influenza-like illness	4	4S	386
<i>Giardia lamblia</i>	3	C,DC,O	11
Campylobacter	2	DC,W	15
Staph intoxication	2	2R	13
<i>E. coli</i> O157:H7	1	C	5
Fifth disease	1	S	11
Meningococcal meningitis	1	C	2
<i>Shigella sonnei</i>	1	DC	5
ARI**	1	W	13
TOTALS	49		1532
*Acute gastrointestinal illness of unknown etiology			
**Acute respiratory illness of unknown etiology			
Key	No. of Outbreaks	Key	No. of Outbreaks
C Community	12	O Other	6
CA Camp	1	R Restaurant	8
CT Catered Event	6	S School	8
DC Daycare	4	W Workplace	2
FG Family Gathering	2		

most common settings. An unusually high number of outbreaks (6 or 12%) were related to catering establishments in 1991. Three of these were caused by *Salmonella* species and three were classified as AGI.

Nosocomial Outbreaks

There were 49 nosocomial outbreaks reported in health care facilities in 1991, involving 771 cases. Most of these (35 or 71.4%) occurred in nursing homes, eight (16.3%) were in hospitals and six (12.2%) were in other extended care facilities.

Table 2 shows the cause, setting and number of cases for 1991 nosocomial outbreaks. *Staphylococcus* species were the most common cause, with 15 outbreaks reported. Of these, 10 were due to methicillin resistant *Staph. aureus* comprising 58 cases. Five were caused by *S. aureus* (20 cases), and one by *S. epidermidis* (9 cases).

Ten outbreaks of scabies were reported, involving 122 cases; nine of these were in nursing homes. Five outbreaks were AGI, including one foodborne outbreak. One outbreak of influenza and two of influenza-like illness were responsible for a total of 113 cases.

Two outbreaks of Norwalk-like virus were confirmed in 1991. These were the first such outbreaks in Missouri to be confirmed by electron microscopy and serologic testing. They involved a total of 90 cases of illness, with person-to-person contact the most likely mode of transmission.

The largest single outbreak was 74 cases of acute respiratory illness of unknown etiology in a nursing home. Group A and Group F Streptococcus were each responsible for one outbreak, as was *Xanthomonas maltophilia*.

Foodborne *Clostridium perfringens* was responsible for one outbreak of 32 cases in a nursing home.

Table 2. Nosocomial outbreaks and investigations by cause, setting and number of cases, Missouri, 1991

Cause	No. of Outbreaks	Setting	No. of Cases
Staphylococcus			
MRSA*	10	2H,7NH,O	58
<i>S. aureus</i>	5	4H,O	20
<i>S. epidermidis</i>	1	NH	9
Staphylococcus Totals	15		87
Scabies	10	H,9NH	122
AGI**			
Unknown vehicle	4	4NH	135
Foodborne	1	NH	48
AGI Totals	5		183
Influenza (confirmed)	1	NH	55
Influenza-like illness	2	2NH	58
Chickenpox	2	O,NH	3
Norwalk-like virus	2	2NH	90
Group A strep	1	O	11
Group F strep	1	NH	16
<i>Clostridium difficile</i>	1	NH	3
<i>Clostridium perfringens</i>	1	NH	32
<i>Haemophilus influenza</i>			
pneumonia	1	NH	5
Hepatitis A	1	NH	1
Meningococcal meningitis	1	O	2
Neonatal sepsis	1	H	13
Pediculosis	1	O	4
ARI***	1	NH	74
<i>Xanthomonas maltophilia</i>	1	H	12
TOTALS	49		771
* Methicillin resistant <i>Staph aureus</i> ** Acute gastrointestinal illness of unknown etiology *** Acute respiratory illness of unknown etiology			
Key		No. of Outbreaks	
H	Hospital		9
NH	Nursing Home		34
O	Other Extended Care Facility		6

Bureau of Communicable Disease Control

1991 Annual Report

Michael Fobbs, B.A.

Mahree Fuller Skala, M.A.

Bureau of Communicable Disease Control

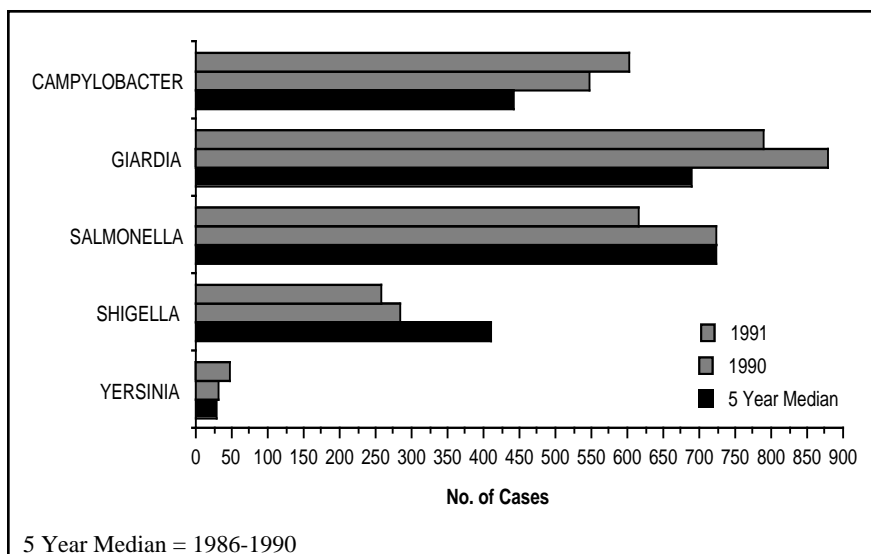
In 1991, Missouri was one of six states and cities selected to participate in a special disease surveillance project. The Centers for Disease Control is sponsoring active laboratory-based surveillance for certain invasive bacterial diseases. Starting in 1992, the Bureau of Communicable Disease Control makes biweekly contact with laboratories testing for *Haemophilus influenzae* (Hib), *Neisseria meningitidis*, *Listeria monocytogenes* and Group B Streptococcus (GBS). Case-control studies of neonatal GBS disease and invasive Hib infections are also being conducted. Information obtained through these studies will be shared in future issues.

Enteric Diseases

Differing trends were noted for the various reportable enteric diseases, with increases in campylobacter and *Yersinia enterocolitica* infections and slight decreases in salmonella and shigella reports (See Figure 1).

Campylobacter reports increased by 10%, to 602 cases in 1991. Increases were seen in the Eastern, Northeastern, Northwestern, and Southeastern districts. Northeastern District had the largest percentage increase, although the numbers were small (4 cases in 1990, 11 in 1991). Campylobacter reporting has increased steadily since 1987. The 1991 total was 36.5% higher than the five-year median of 441 cases.

Salmonellosis fell to 616 reports, 14.8% below the 1990 total and the five-year median, despite outbreaks of *S. braenderup*, *S. infantis*, *S. oranienburg*, *S. typhimurium*, *S. muenchen* and *S. poona*. Reporting decreased in all areas except the Northeastern District, which was



5 Year Median = 1986-1990

Figure 1. Enteric disease reports, Missouri, January-December 1991, 1990 and five-year median

Table 1. Most common salmonella serotypes, Missouri, 1990 and 1991

1990			1991		
Serotype	No. of Cases	Percent	Serotype	No. of Cases	Percent
1. Typhimurium	215	29.7%	Typhimurium	144	23.4%
2. Newport	95	13.1%	Heidelberg	65	10.6%
3. Heidelberg	70	9.7%	Braenderup	45	7.3%
4. Enteritidis	42	5.8%	Enteritidis	32	5.2%
5. Hadar	25	3.5%	Oranienburg	28	4.5%
6. Agona	23	3.2%	Newport	26	4.2%
7. Thompson	16	2.2%	Hadar	21	3.4%
8. Montevideo	10	1.4%	Poona	18	2.9%
9. Chester	9	1.2%	Thompson	17	2.8%
10. Oranienburg	9	1.2%	Infantis	16	2.6%
11. Braenderup	8	1.1%	Agona	11	1.8%
			Muenchen	11	1.8%
All Others	201	27.8%	All Others	182	29.5%
Total	723		Total	616	

virtually unchanged, and the Southeastern District, where there was a large outbreak of *S. braenderup* in December. The most common serotypes are shown in Table 1. The proportion of *S. enteritidis* isolates has not changed significantly in the past several years.

Shigellosis, at 259 cases, was 8.8% below the 1990 total of 284 cases. Central,

Northeastern, Southeastern and Southwestern districts all showed decreases. The two districts with the largest urban areas, Eastern and Northwestern, showed sizable increases (See Figure 2 on page 7 and related story on page 3 of this issue). The highest rate (23.8/100,000) was reported from Kansas City. State-wide, shigellosis was down 36.9% from the five-year median of 411 cases.

Yersinia enterocolitica, at 48 cases, remains a disease of concern. The 1991 total was a 50% increase from 1990 and the five-year median. The Eastern and Northwestern districts reported 85.4% of the cases. Of the 31 cases with race reported, 67.7% were black. Most were preschool children; 56.3% of all cases were under one and 77.0% were under five.

Giardia lamblia

Giardiasis, at 790 cases, decreased 10.0% from 878 cases in 1990. This was the largest decrease in any year since reporting began in 1979. Rates went down in all areas except the Northwestern and Southeastern districts. The 1991 total was 14.5% higher than the five-year median of 690 cases.

Viral Hepatitis

Hepatitis A, at 653 cases, was up 5.5% from 1990 and the five-year median (See Figure 3). The geographic pattern of incidence changed markedly in 1991 compared with the previous four years, with increases in several areas and a decline in the Northwestern District (See Figure 4). The rate has decreased in the Northwestern District from a high of 58.7 cases per 100,000 population in 1988 to 20.2 per 100,000 in 1991, despite a December 1990/January 1991 outbreak of hepatitis A in Belton. This decrease led to reductions in the state totals in 1989 and 1990.

In 1991, however, higher rates of infection were reported in the Central, Eastern, and Southeastern districts. See related article on page 19. The largest increase occurred in the Southeastern District, which had the highest rate.

There were 549 cases of Hepatitis B reported in 1991, down 13.3% from 633 cases in 1990, which was also the five-year median. This decrease was noted statewide, and reflects a national trend that began in 1990.

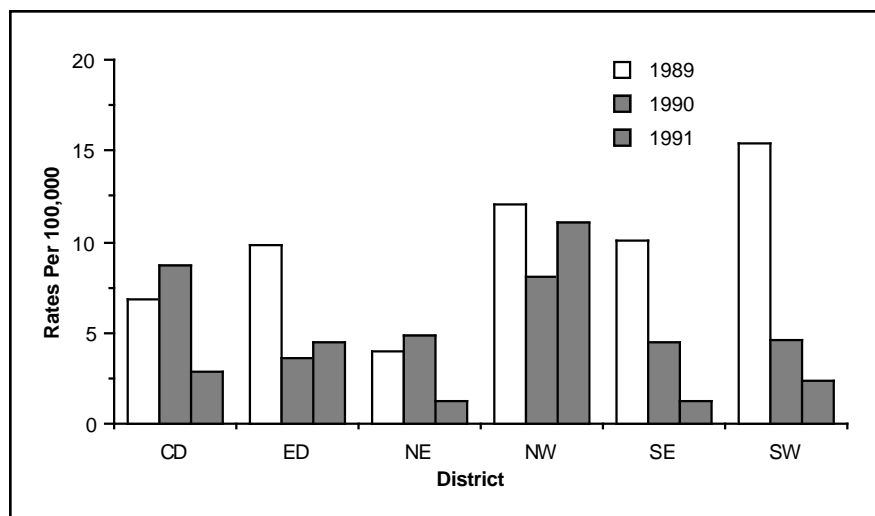


Figure 2. Shigellosis rates by district, Missouri, 1989-91

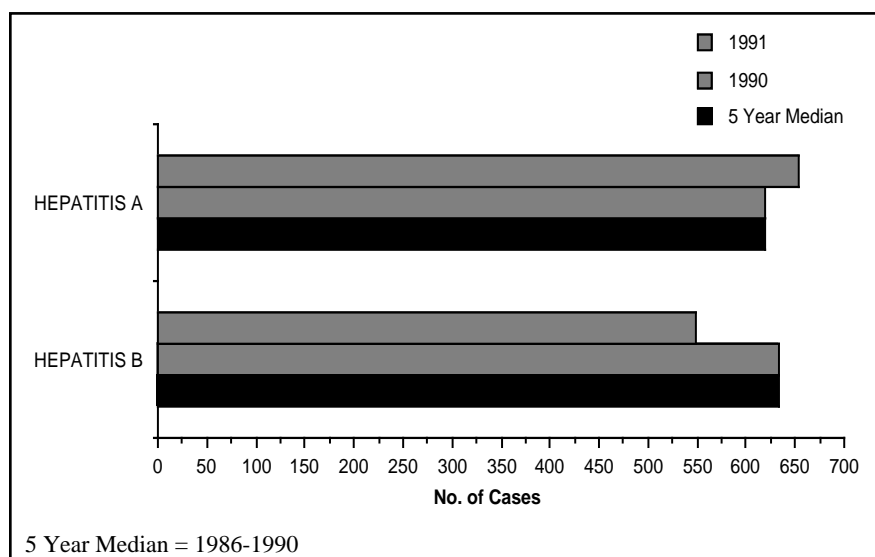


Figure 3. Hepatitis reports, Missouri, January-December 1991, 1990 and five-year median

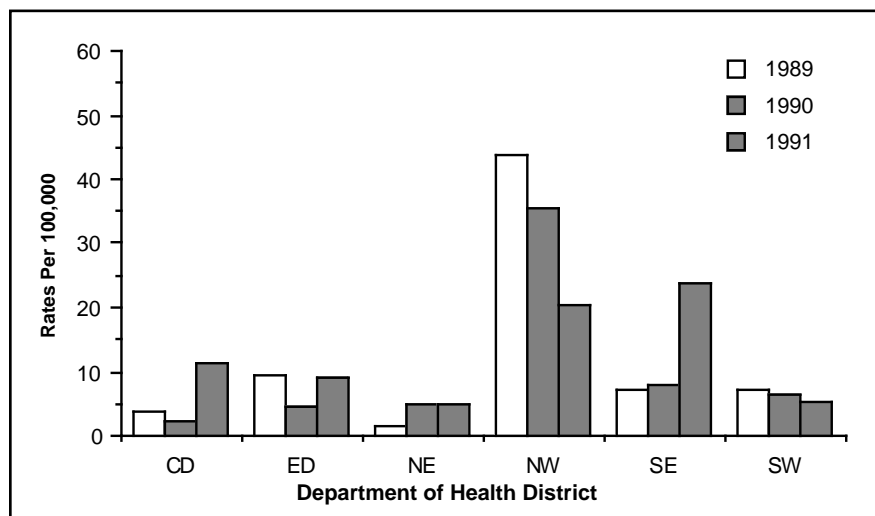


Figure 4. Hepatitis A rates by district, Missouri, 1989-91

Meningitis

Aseptic meningitis increased to 277 cases, up 12.6% from 246 cases in 1990 (See Figure 5). Most of the additional cases were reported from the Eastern district. The 1991 total was 61.0% above the five-year median of 172 cases, and was the highest number reported since 1983.

Meningococcal meningitis, at 37 cases, was 19.4% above the 31 cases reported last year. It was 12.1% above the five-year median of 33 cases, but well within the range of 21-55 cases seen annually for the last fifteen years.

Haemophilus influenzae type b Disease (Hib)

Hib meningitis, at 42 cases, decreased 52.3% from 88 cases in 1990 and 69.6% from the five-year median of 138 cases. This encouraging downward trend has been evident since 1988 and has occurred primarily in the youngest age groups (See Figure 6).

Other invasive Hib disease, at 39 cases, was down 31.6% from 57 cases in 1990, the first year it was made reportable. Together, these figures strongly suggest that use of the newer Hib vaccines under the currently recommended schedule has been effective in reducing Hib morbidity.

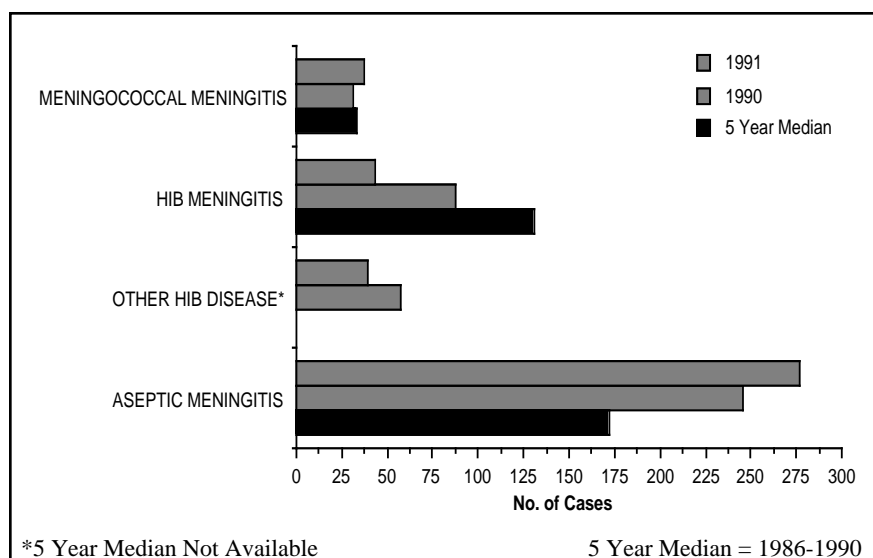


Figure 5. Invasive bacterial disease reports, Missouri, January-December 1991, 1990 and five-year median

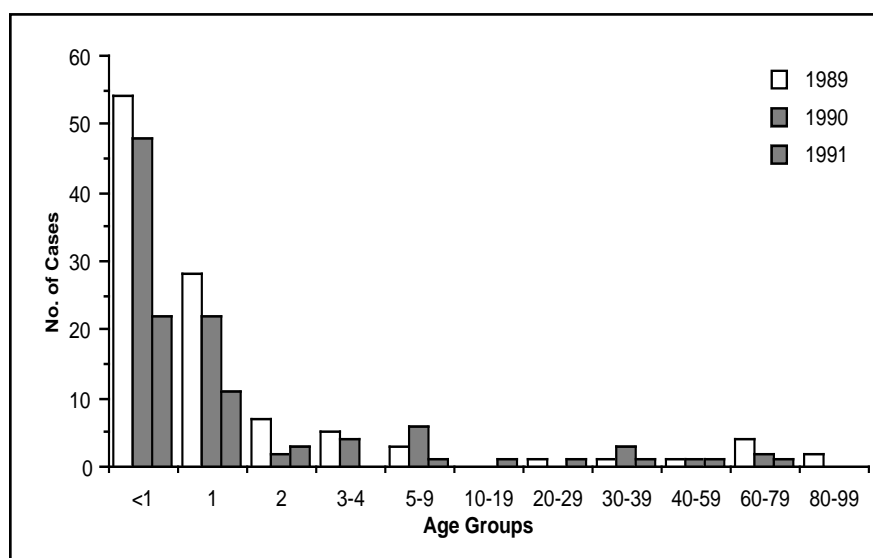


Figure 6. Hib meningitis by age group, Missouri, 1989-91

Rabies Summary

(continued from page 14)

with 3,079 cases of raccoon rabies being reported in 1991 versus 1,821 in 1990, a 69% increase. For the past several years, raccoon rabies has continued to spread from its new epicenter in the mid-Atlantic states at a rate of 25-30 miles per year. As rabies moves into a new area with many susceptible animals, the number of cases increases and the epizootic continues. At the present rate of western movement, we can expect that epizootic to reach Missouri in about eight years.

However, since raccoons are found on flatbed trucks arriving in Missouri from Virginia on a monthly basis, we may very well be giving nature some assistance by transporting rabid raccoons into Missouri at an earlier date. The other wildlife species that has shown a dramatic increase in 1991 is the coyote. Texas has tested a total of 98 coyotes and found 46 (47%) of them positive for rabies. Since coyotes are known to travel great distances, Missouri could experience a coyote rabies threat from the south. Early 1992 reports from Kansas indicate a 400% increase in skunk ra-

bies. Thus Missouri could experience a skunk rabies threat from the west. Fortunately, rabies in Iowa was down from 215 cases in 1990 to 156 cases in 1991.

There were three human cases of rabies in 1991, one each in Arkansas, Georgia, and Texas.

Thus with rabies proven to be endemic in Missouri and epizootics of rabies threatening from the east, south and west, vigilance must continue and protective-preventive measures should be implemented immediately.

Bimonthly Morbidity Report, May/June 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Bimonthly Morbidity Summary, May/June 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Missouri Morbidity and Mortality Reports of Selected Communicable Diseases - 15 Year Report

	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977
AIDS	656	599	481	403	239	91	52	28	6	1	-	-	-	-	-
Amebiasis	25	26	19	30	27	26	28	44	45	11	28	15	29	20	10
Brucellosis	3	1	2	4	14	4	12	7	4	4	4	3	6	3	9
Campylobacter	602	547	473	441	260	281	304	260	166	115	78	49	-	-	-
Chickenpox	7678	10591	9086	11350	8595	5093	2474	2565	408	637	880	2331	3510	4048	4246
Chlamydia	10643	11151	8151	6239	2944	1532	412	9	-	-	-	-	-	-	-
Encephalitis, Inf.	22	12	6	8	11	13	12	11	28	16	10	13	16	16	11
Giardiasis	790	878	859	654	690	516	458	462	216	235	113	77	72	-	-
Gonorrhea	17450	20012	21053	17241	16491	19029	20023	20042	20750	21269	22249	21640	21395	23029	21126
Haemophilus influenzae type B															
Meningitis	42	88	106	138	131	172	108	104	86	66	-	-	-	-	-
Other Invasive	39	57	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis A	653	619	810	897	560	126	98	138	123	204	282	254	392	552	504
Hepatitis B	549	633	704	639	460	420	359	297	365	297	307	205	267	231	233
Non A, Non B	31	42	53	50	46	39	42	18	33	24	(These years are added into Hepatitis Unspec)				
Unspecified	15	19	13	21	21	15	24	46	87	95	214	176	189	192	205
Influenza (confirmed)	462	220	293	148	69	78	61	39	140	153	225	-	-	-	-
Lyme Disease	207	205	108	-	-	-	-	-	-	-	-	-	-	-	-
Malaria	9	13	13	6	8	12	5	8	4	10	4	16	6	10	23
Meningitis, Asep.	277	246	223	124	163	172	156	95	277	156	178	116	130	-	-
Meningitis, Mening.	37	31	21	33	35	40	46	53	55	40	45	42	38	42	29
Meningitis, Other	62	66	64	64	75	123	47	51	276	156	122	127	94	92	89
Mumps	40	62	87	68	38	23	18	11	21	13	40	103	203	1211	2421
Pertussis	83	116	141	25	46	32	35	23	24	17	24	30	24	45	31
Polio, all forms	0	0	0	1	0	0	1	0	2	0	1	0	1	0	0
Rabies, Animal	28	30	62	36	59	75	59	70	96	123	243	379	307	95	60
RMSF	25	36	48	54	26	25	10	14	14	10	23	31	31	29	19
Rubella	5	3	4	0	0	1	7	0	0	38	2	45	73	118	93
Rubeola	1	103	671	65	190	32	5	6	1	2	1	67	436	154	1055
Salmonellosis	616	723	676	772	660	728	690	617	602	571	700	589	602	488	418
Shigellosis	259	284	411	607	471	89	143	244	264	67	268	129	258	443	406
Syphilis, Total	926	598	388	473	328	494	578	712	801	1069	1397	1051	896	1573	1728
Primary & Second.	572	272	162	154	90	110	133	186	145	296	394	163	139	144	172
Tetanus	1	0	4	1	1	2	3	6	1	1	1	2	1	2	4
Tuberculosis	254	312	278	275	339	338	311	354	399	390	432	466	500	456	497
Tularemia	44	33	39	45	58	32	35	40	51	27	28	26	21	21	26
Typhoid Fever	2	4	2	3	7	6	6	6	10	4	9	20	8	7	14
Yersinia enterocolitica	48	32	36	30	10	6	2	3	1	-	-	-	-	-	-

Tick-Borne Disease Summary - 1991

*F. T. Satalowich, D.V.M., M.P.H.
Bureau of Veterinary Public Health*

Tularemia

Forty-four cases of tularemia were confirmed and reported in Missouri during 1991 (See Figure 1). This is an increase of 11 cases from the 1990 total of 33 cases. Tularemia continues to be the primary and most serious tick-borne disease in the Ozark Plateau Region of southwest and south central Missouri. Transmission can occur from infected rabbits or ticks. The disease presents itself in a number of clinical forms, from ulceroglandular, glandular to pneumonic depending on the route and method of exposure. Without prompt, proper treatment, the disease can be fatal. Diagnostic tests, including isolation, are readily available and reliable. Antibiotic treatment with streptomycin or gentamycin is effective. Historically, Missouri averages 40-50 cases per year; usually vying with Arkansas for the state with the largest number of cases. As with all tick-borne diseases in Missouri, most cases of tularemia occur south of the Missouri River. Males and the age group of 25-45 years continue to be at a higher risk. Prevention is best accomplished by not handling sick wild rabbits and practicing good tick control measures.

Rocky Mountain Spotted Fever

Twenty-six cases of Rocky Mountain spotted fever (RMSF) were confirmed and reported in Missouri in 1991 (See Figure 2). This is 28% less than the 36 cases recorded in 1992. It is also 32% less than the most recent five-year mean of 38 cases per year. The primary vector of Rocky Mountain spotted fever in Missouri is the American Dog Tick, *Dermacentor variabilis*. Males between the ages of 20 and 60 are at the highest

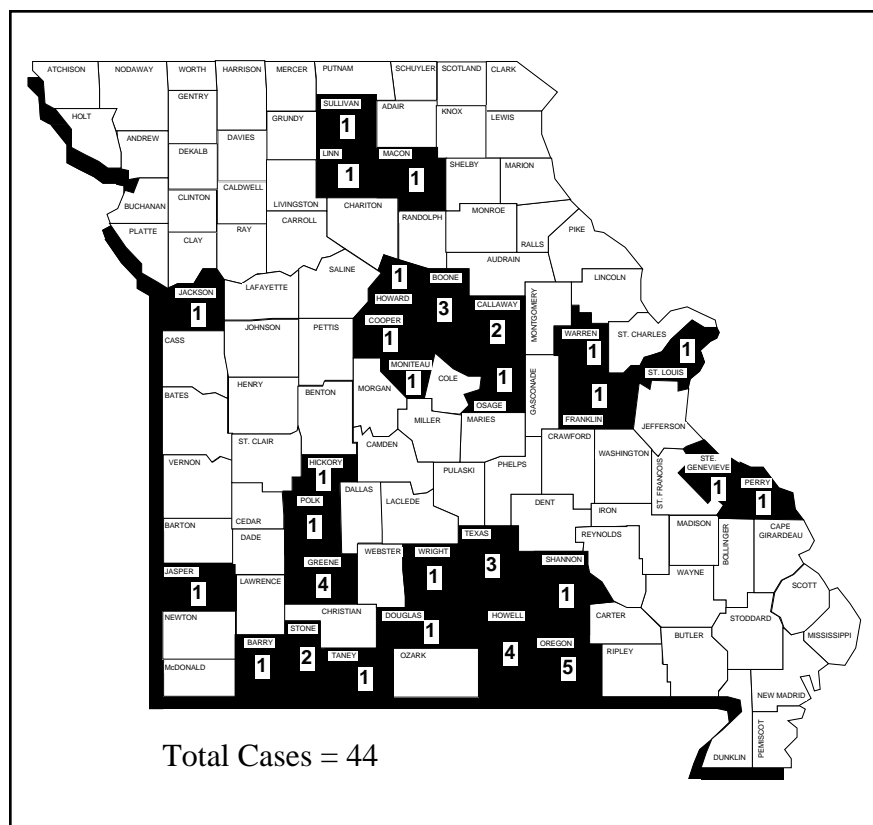


Figure 1. Tularemia cases, Missouri, 1991

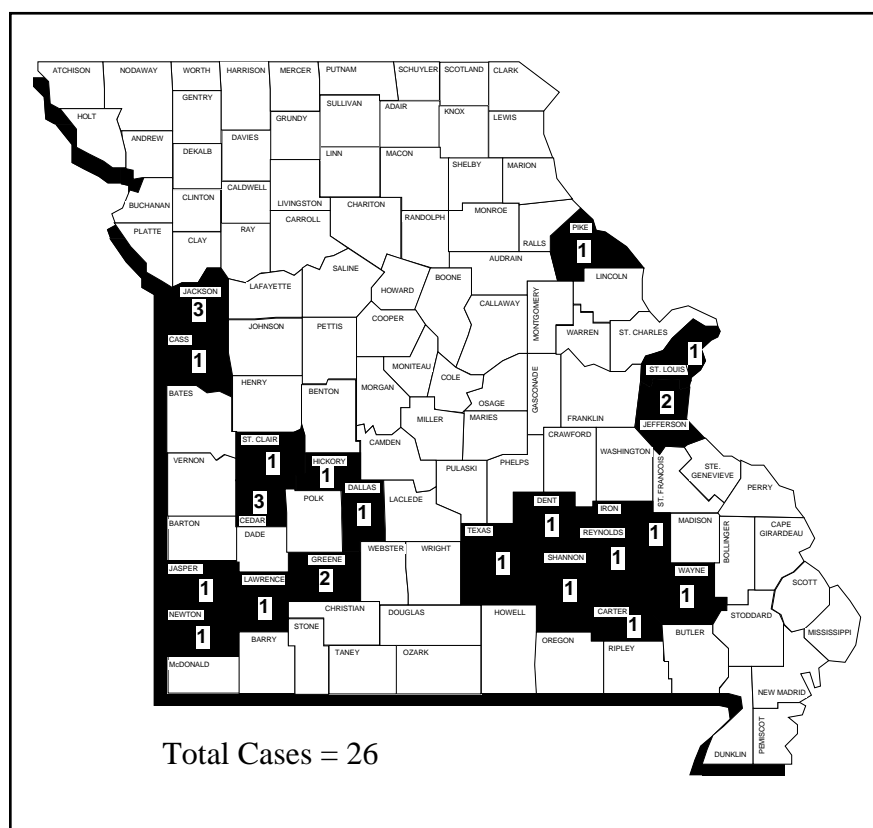


Figure 2. Rocky Mountain spotted fever cases, Missouri, 1991

Ehrlichiosis

Most ehrlichiosis patients have a non-specific febrile illness accompanied by headache, myalgia, anorexia, nausea, vomiting, chills and in some cases, by a rash. Laboratory abnormalities including leukopenia, thrombocytopenia and elevated levels of hepatic aminotransferases are common. Tetracycline appears to be effective in treating ehrlichiosis; the efficacy of other antibiotics has not been evaluated.

Total Cases = 13

Figure 3. Ehrlichiosis cases, Missouri, 1991

history should accompany the specimens. Paired sera (collected preferably 2-4 weeks apart) along with EDTA whole blood will be forwarded to the Centers for Disease Control for testing. **For more information, please contact Dr. F. T. Satalowich at (314) 751-6136.**

Shigellosis on the Rise

(continued from page 3)

- Careful sanitation, including regular decontamination of hard surfaces, toys, and other potential fomites.
- Exclusion of children with diarrhea from child care until they are well.

Please report shigellosis cases promptly to your local health department or to the Missouri Department of Health at (800) 392-0272.

REFERENCES

- July-September 1992

Bureau of AIDS Prevention - 1991 Report

The mission of the Bureau of AIDS Prevention is to:

- prevent new infections of HIV;
- identify infected individuals early in the course of their HIV infection to facilitate prevention of illness and thus early mortality; and,
- facilitate comprehensive support and care to those already ill in order to maintain or improve their quality of life.

These three broad strategies are incorporated in the bureau's major programs: Health Education, Counseling and Testing, Surveillance, Service Coordination and Client Services.

The bureau's ongoing fight against AIDS attempts to alert Missourians to how HIV spreads so they can evaluate their risk and avoid infection; it monitors the progression of the epidemic, and gives assistance to those already infected. This comprehensive approach to HIV management continues to prove beneficial to clients and cost-saving to Missouri.

During 1991, the bureau received funding through the Ryan White CARE Act of 1990 to help care for HIV-infected individuals. The additional funding allowed the bureau to provide services and medications to help individuals maintain a healthier and more independent life (health care, medications, housing, transportation, insurance and home and community-based services). However, despite the increase in funds, spiraling costs and the growing number of HIV/AIDS cases rapidly depleted Missouri's funding. The bureau continues to explore avenues to secure additional care dollars.

More than 600 persons with HIV illness received medications through the bureau during 1991. More than 450 persons received health care and support services. The housing program assisted more than 200 persons and over 175 received transportation services.

As the number of persons identified as HIV-infected or having AIDS continues to increase, so does the need for special health care, counseling and personal services. Assistance with accessing these services is available through the bureau's service coordination and client services programs. During 1991, over 1600 clients were enrolled in at least one of these two programs. More than 628 clients took advantage of the medication program which is offered through clients services.

The service coordination program was recognized nationally during 1991 when it received the Health Care Financing Administration award for outstanding contributions in providing health care and support services to persons living with HIV infection and AIDS.

During 1991, the bureau's health education and public information programs continued to inform people of their risk for HIV infection and how to reduce that risk. These programs provided specifically-targeted prevention messages to Missourians through community meetings, school programs, public information campaigns and street outreach.

Many prevention messages reach the local level through community-based organizations (CBOs). The CBOs reach people at risk for HIV infection with messages that are culturally-specific and sensitive to the needs of those at greater risk.

Prevention messages also targeted people seeking counseling and testing services. When people visit one of Missouri's 60 free counseling and testing sites, they receive one-on-one prevention information about their risk of exposure to HIV and how to avoid further exposure. More than 51,000 people visited Missouri's free counseling and testing sites during 1991.

An average of 100 new cases of HIV were reported each month during 1991. Many of these new cases were identified through counseling and testing sites and from private physicians. Physicians and others performing tests for HIV are required to report to the Department of Health the names of individuals testing positive for HIV and those diagnosed with AIDS. These reports are collected by the bureau's surveillance program and analyzed to help monitor the progression of the HIV/AIDS epidemic in Missouri.

The bureau's surveillance program and counseling and testing program work cooperatively to assure that HIV-positive results are recorded accurately and promptly. Figure 1 below shows the 1991 HIV and AIDS reports in comparison to the cumulative cases since reporting began.

As the bureau plans its future strategies and monitors the fight against AIDS, it will strive to meet the needs of those infected and generate new messages to prevent the further spread of HIV through Missouri.

Figure 1

Missouri HIV and AIDS Case Reports	
<i>1991 HIV Reports</i>	1,299
Cumulative HIV Reports Oct. 25, 1987 through 1991	4,375
<i>1991 AIDS Case Reports</i>	657
Cumulative AIDS Case Reports 1982 through 1991	2,557

Sexually Transmitted Diseases - 1991

Bill Huber

Bureau of Sexually Transmitted Diseases

The Bureau of Sexually Transmitted Diseases provides assistance to local health departments for the control of sexually transmitted diseases in their communities. Guidelines for testing, diagnosis and treatment are developed and distributed as recommended by the Centers for Disease Control. Screening materials and medication for treatment are provided to local areas and personnel are available to help provide disease intervention services. The Bureau of Sexually Transmitted Diseases provides morbidity trend analysis and other program evaluation.

Early Syphilis (Primary, Secondary and Early Latent under one year)

The reported incidence of early syphilis increased significantly in 1991 compared to 1990 with an increase of 381 cases. Primary and secondary cases increased 110% from 272 in 1990 to 572 cases in 1991. Early latent cases increased 49% from 166 cases in 1990 to 247 in 1991. Kansas City reported almost half of the early syphilis cases in Missouri with 315 primary and secondary cases and 128 early latent cases. The majority of the Kansas City cases continue to occur around crack-cocaine using areas where increases have also been noted in other sexually transmitted diseases.

The primary and secondary rate of 11.1 per 100,000 population in Missouri is lower than the rate of 17.3 per 100,000 population reported nationally in 1991.

Gonorrhea

The reported incidence of gonorrhea decreased by 12.8% in Missouri from 20,012 cases in 1990 to 17,450 in 1991. The rate per 100,000 population de-

creased from 391.0 in 1990 to 338.3 per 100,000 in 1991. St. Louis City reported a decrease of 8.4%, St. Louis County 8.2%, Kansas City 22% and outstate Missouri reported a decrease of 14.5%.

This is the second consecutive year in which a decrease in gonorrhea has been reported. The reasons for these significant decreases are unclear.

Penicillinase-producing *N. gonorrhoeae*

Resistant gonorrhea decreased 52% from 706 cases reported in 1990 to 335 cases in 1991. Kansas City accounted for 166

of the 335 total cases, St. Louis City accounted for 78 cases, St. Louis County 64 cases and outstate Missouri accounted for 27 cases.

Gonococcal Pelvic Inflammatory Disease

Gonococcal pelvic inflammatory disease decreased from 396 cases reported in 1990 to 384 cases in 1991. This decrease occurred in outstate Missouri. St. Louis City and St. Louis County reported a slight increase from 208 cases in 1990 to 226 cases in 1991. Kansas City reported an increase from 17 cases in 1990 to 77 cases in 1991.

State Public Health Laboratory Report

Newborn Screening — Hypothyroidism, Phenylketonuria, Galactosemia and Hemoglobinopathies

James Baumgartner, B.S., M.B.A., Chief, Metabolic Disease Unit

	Jul 91	Aug 91	Total YTD
Specimens Tested	9,269	10,440	56,787
Initial (percent)	70.0%	67.7%	38,955
Repeat (percent)	30.0%	32.3%	17,832
Specimens: Unsatisfactory	115	122	724
HT Borderline	784	648	2,811
HT Presumptive	27	29	106
PKU Borderline	26	32	88
PKU Presumptive Positive	0	1	3
GAL Borderline	36	58	221
GAL Presumptive Positive	3	5	15
FAS (Sickle cell trait)	93	113	567
FAC (Hb C trait)	20	29	154
FAX (Hb variant)	22	23	105
FS (Sickle cell disease)	2	2	13
FSC (Sickle C disease)	2	3	8
FC (Hb C disease)	1	2	6

HT = Hypothyroidism, PKU = Phenylketonuria, GAL = Galactosemia,
Hb = Hemoglobin, YTD = Year to Date

Nongonococcal Urethritis

Reported cases of nongonococcal urethritis increased 17% from 7,737 cases in 1990 to 9,068 cases in 1991. This increase occurred in all areas of the state with the exception of St. Louis City. This is the third consecutive year in which an increase has occurred.

Chlamydia Trachomatis Infections

Chlamydia trachomatis infections decreased 5% from 11,151 cases reported in 1990 to 10,643 cases reported in 1991. This is the first year the reported incidence of *Chlamydia trachomatis* infection has decreased since it was designated as a reportable infection in March 1986, when 1,532 cases were reported. Widespread clinical therapy and dual treatment of all gonorrhea cases (gonorrhea therapy plus chlamydia therapy), combined with more extensive screening from 1986 through 1991, may have contributed to the noted decreases. Positivity in the screening program has decreased from 16% positivity five years ago to 10% last year.

Genital Herpes

Genital herpes decreased very little with 3,310 cases reported in 1990 to 3,244 cases in 1991. St. Louis County, Kansas City and outstate Missouri reported slight increases in cases reported and St. Louis City reported a decrease of 359 cases.

Congenital Syphilis

Congenital syphilis increased from 10 cases reported in 1990 to 14 cases in 1991. This trend is expected to continue over the next few years due to the revised and expanded surveillance criteria for congenital syphilis initiated July 1, 1990, as shown in Figure 1.

Congenital Syphilis Surveillance Case Definition (effective July 1, 1990)

For reporting purposes, congenital syphilis includes cases of congenitally acquired syphilis in infants and children, as well as syphilitic stillbirths.

A **confirmed case** of congenital syphilis is:

An infant in whom *Treponema pallidum* is identified by darkfield microscopy, fluorescent antibody, or other specific strains in specimens from lesions, placenta, umbilical cord, or autopsy material.

A **presumptive case** of congenital syphilis is either of the following:

- A. Any infant whose mother had untreated or inadequately treated¹ syphilis at delivery, regardless of findings in the infant;

OR

- B. Any infant or child who has a reactive treponemal test for syphilis and any one of the following:

- a. Any evidence of congenital syphilis on physical examination²;

or

- b. Any evidence of congenital syphilis on long bone x-ray;

or

- c. Reactive cerebrospinal fluid (CSF) VDRL³;

or

- d. Elevated CSF cell count or protein (without other cause)³;

or

- e. Quantitative nontreponemal serologic titers which are four-fold higher than the mothers (both drawn at birth);

or

- f. Reactive test for FTA-ABS-19S-IgM antibody³.

A **syphilitic stillbirth** is defined as:

A fetal death in which the mother had untreated or inadequately treated¹ syphilis at delivery of a fetus after a 20-week gestation or of >500 grams.

¹ Inadequate treatment consists of any non-penicillin therapy given less than 30 days prior to delivery.

² Signs in an infant (<2 years) may include hepatosplenomegaly, characteristic skin rash, condyloma lata, snuffles, jaundice (syphilitic hepatitis), pseudoparalysis, or edema (nephrotic syndrome). Stigmata in an older child may include: interstitial keratitis, nerve deafness, anterior bowing of shins, frontal bossing, mulberry molars, Hutchinson's teeth, saddle nose, rhagades, or Clutton's joints.

³ It may be difficult to distinguish between congenital and acquired syphilis in a seropositive child after infancy. Signs may not be obvious and stigmata may not yet have developed. Abnormal values for CSF VDRL, cell count, and protein, as well as IgM antibodies, may be found in either congenital or acquired syphilis. The decision may ultimately be based on maternal history and clinical judgment; the possibility of sexual abuse also needs to be considered.

Figure 1

Bureau of Environmental Epidemiology

FY1992 Report as of September 1992

Gale M. Carlson, B.S.

Bureau of Environmental Epidemiology

The Bureau of Environmental Epidemiology is routinely involved in assessing risk to human health from hazardous substances in the environment. Requests come from private citizens, district and local health authorities, physicians, various municipal agencies, other state agencies, and various federal organizations. A variety of documents discussing exposure levels, health effects, safe clean-up levels, and risk from exposure to substances at hazardous waste sites throughout Missouri are produced for the Missouri Department of Natural Resources, the U.S. Environmental Protection Agency (EPA) and the Agency for Toxic Substances and Disease Registry (ATSDR).

In 1992, all 51 abandoned and uncontrolled hazardous waste facilities in the state were assessed for their risks to human health. Another 28 assessments were conducted on candidate hazardous waste facilities. The Health Assessment Program in cooperation with ATSDR has initiated or completed five health assessments. The risk assessment program in cooperation with the EPA completed three risk assessments, six reviews and have five assessments pending for federal superfund sites. Missouri is the only state health agency in the nation that provides this service to the EPA.

In cooperation with the Bureau of Health Data Analysis, three Resource Conservation and Recovery Act health profiles were reviewed. These are profiles of the health status of a community surrounding a proposed resource recovery facility such as battery recycling, electrical equipment refurbishing, or waste incineration. Clean-up assessments (development of safe residual contaminant levels) for 25 sites in the state were also produced.

The Pesticide in Groundwater Monitoring Program is another area of involvement by the bureau. Since 1986, we have been sampling private drinking water wells in selected areas of the state for agricultural pesticides. This past year we sampled 220 wells in five counties in north central Missouri and during July 1992 sampled 150 wells in northeast Missouri. These studies have involved more than two dozen Missouri counties and indicate that herbicide detection rates in private wells range from 0 to more than 40% depending on land use, geological characteristics and geographic location of the county.

The industrial hygiene section conducts indoor air quality investigations to determine the possible cause of health problems within Missouri facilities. During 1992, a total of 100 investigations were conducted in state/local government buildings, private industry and private residences. These investigations revealed that elevated carbon dioxide levels and inadequate ventilation were the main reasons for the problems. This year the Department of Health was awarded a grant from the National Institute for Occupational Safety and Health (NIOSH) to investigate occupational fatalities resulting from falls, electrocutions or confined space accidents. The Bureau of Environmental Epidemiology will conduct the investigation, review all data involved with the fatality, make recommendations to prevent similar incidents from occurring and develop a final report to be forwarded to NIOSH. Official statewide implementation of the program began in May 1992. Through June 1992, 14 occupational fatalities have been reported with five meeting the project criteria mentioned above.

During 1992, there have been no new guidelines or mandates handed down

from the federal level regarding the Lead Contamination Control Act of 1988. During this time, however, the results of the testing done in Missouri schools and day care centers in 1991 have been analyzed. For further information on this, please refer to the article on lead in school drinking water published in the January-February 1992 issue of the *Missouri Epidemiologist*. A paper summarizing the results was presented at the Association of Official Analytical Chemists - Midwest Section meeting on June 10, 1992, in Cham-paign, Illinois. These results were also presented at the 1992 International Environmental Health Conference in Winnipeg, Canada, on July 12-16, 1992. This paper has also been accepted for publication in the *Journal of Environmental Health*. Of all the outlets that were tested in Missouri schools, 5.7% exceeded the 20 ppb action level for lead. In day care centers, 2.4% of all the outlets exceeded the action level. In most cases, remedial action was taken on those outlets that tested above the action level.

The Bureau of Environmental Epidemiology issues an annual Fish Consumption Advisory. The May 1992 advisory emphasized that carp and catfish in many water bodies in the state are still contaminated with chlordane and other pesticides at a level of health concern. However, the advisory was simplified and shortened because of results obtained in a recent study by the bureau. The study revealed that our previous advisories, based on levels of contaminants in fish, did not accurately predict exposure of humans to the contaminants. We discovered that the factors causing elevated blood contamination were not influenced by where the fish were caught but the amount of fish consumed and the length of time the fish were consumed at those levels. The advisory also emphasized the types of

fish that were safe to eat and stressed the benefits of eating fish as a good healthy protein source.

Preliminary work for a Respiratory Function Study of two communities exposed to sulfur dioxide from lead smelters began in November 1991 with a visit by representatives from ATSDR. A protocol has been developed to compare the two exposed communities to a non-exposed community. The purpose of this study is to determine if there is a significant difference in lung function between a population exposed to sulfur dioxide emissions and a non-exposed population. Public information meetings were held. Census information and respiratory function testing were collected this summer. Results of this study are expected to be available in the spring of 1993.

Department of Health Telephone and HOTLINE Numbers

AIDS Information Line (800) 533-AIDS
AIDS Prevention (314) 751-6438
Communicable Disease consultation (314) 751-6113
Communicable Disease reporting (800) 392-0272
Community Sanitation (314) 751-6095
Dioxin HOTLINE (800) 392-7245
Division of Environmental Health
and Epidemiology (314) 751-6080
Environmental Epidemiology (314) 751-6102
Immunization (314) 751-6133
Occupational Fatality HOTLINE (800) 392-7245
Office of Epidemiology (314) 751-6477
Radiological Health (314) 751-6083
Radon HOTLINE (800) 669-7236
Sexually Transmitted Diseases (314) 751-6139

Hepatitis A Trends, Missouri, January-June 1992

Mahree Fuller Skala, M.A.
Bureau of Communicable Disease Control

The overall incidence of hepatitis A increased by 7.7% during the first half of 1992, and the cases are distributed quite differently than in 1991 (See Figure 1).

Rates have increased in the Southwestern, Eastern, and Northeastern Districts.

A large outbreak has been in progress in the Joplin area since December 1991, resulting mostly from person-to-person transmission. A waterborne outbreak in

Newton County in April-June resulted in 28 confirmed cases. Compared with 24 cases in the first half of 1991, Southwestern District has had 114 cases in 1992, a 375% increase.

In the Eastern District, the case count rose from 83 in the first half of 1991 to 149 in 1992, up 79.5%. A marked change has taken place in the age distribution of cases within the district. In 1991, 25.3% of the cases were under 20 years old; in 1992, 45.6% were under 20. The change in racial distribution is even more dramatic, from 17.3% in blacks in 1991 to 66.0% in 1992, compared with 6.1% outside of Eastern District. The number of cases among whites actually declined by 50%, from 62 to 31 cases. Hepatitis A activity decreased in St. Louis County by 19% and increased in St. Louis City by 224% during the first half of 1992, but St. Louis County has seen an increase in July and August.

In the Northeastern District, a focal outbreak in an Amish community raised the number of cases by 200% compared with 1991.

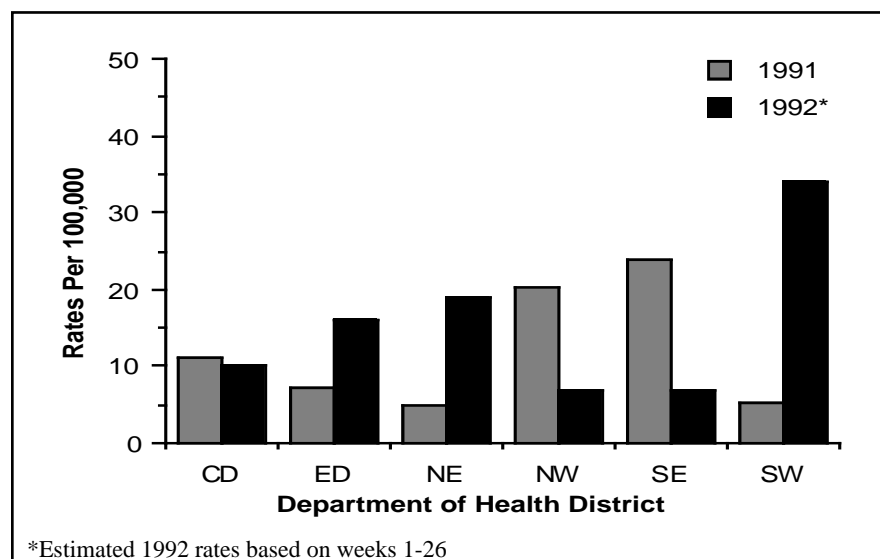


Figure 1. Hepatitis A rates by district, Missouri, 1991 and 1992

Published by the
Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65102-0570

The *Missouri Epidemiologist* is a regularly scheduled bimonthly newsletter published by the Division of Environmental Health and Epidemiology of the Missouri Department of Health. The division's responsibilities include the prevention and control of communicable diseases and environmentally induced illnesses, including the requisite epidemiological investigations.

The Managing Editor is H. Denny Donnell, Jr., MD, MPH, State Epidemiologist, assisted by an Editorial Board including Bill Schmidt, MPH, Director, and Hilda Chaski, MPH, Deputy Director of the Division of Environmental Health and Epidemiology. Diane C. Rackers is the Production Manager. Questions or comments should be directed to (314) 751-6128 or toll free (800) 392-0272.

This newsletter can be recycled.



Vaccine-Preventable Diseases - 1991

Marilyn Kemna
Bureau of Immunization

During 1991, Missouri experienced a significant decrease in the number of measles cases reported; from 103 in 1990 to only 1 case in 1991. No cases of measles have been reported thus far in 1992. Measures to prevent measles morbidity such as requiring a second measles immunization for children attending kindergarten, first and second grade; making available a second dose of measles-mumps-rubella vaccine for college freshmen; and enforcement of the day care law requiring age-appropriate immunization of attendees should help to ensure the continuation of this decrease.

The incidence of pertussis also declined by 28% from 116 cases reported in 1990 to 83 cases reported in 1991. The majority of cases were reported in the pre-school age population, involving mostly unimmunized or inadequately immunized infants. Enforcement of the day care law has resulted in over 79% of the day care attendees receiving age-appropriate immunization against diphtheria, tetanus and pertussis. Strict enforcement of these requirements should continue to reduce the incidence of pertussis in Missouri.

During 1991, 81 cases of *Haemophilus influenzae* type b were identified, representing a decrease of 44% from the previous year when 145 cases were reported. The availability of *Haemophilus*

influenzae type b vaccine for administration to infants beginning at two months of age has had a dramatic effect on lowering the incidence of invasive *H. influenzae* in Missouri.

Incidence of rubella remained low with only five cases reported in 1991.

Missouri also experienced a decrease in the number of reported mumps, from 62 during 1990 to 40 cases during 1991.

There was one death attributed to tetanus during 1991. This death occurred in a 62-year-old Ozark County housewife. No history of prior tetanus immunization could be documented. This unfortunate incident underscores the importance of Td immunizations every ten years throughout life.

Foodborne Outbreaks Associated With Catered Meals, 1991

Mahree Skala, M.A.

Bureau of Communicable Disease Control

The challenges faced by any food service establishment in preparing and serving safe meals are even greater for catering operations. Caterers face unique difficulties such as wide variations in the number of meals prepared and problems involved in transporting food safely. Unfortunately, those challenges aren't always met successfully. Six foodborne outbreaks associated with catered meals were reported in Missouri in 1991, the most reported in any one year. Three of the six were caused by *Salmonella* species; in the other three, the causative agent could not be determined. A brief description of each follows.

Salmonella braenderup at a Holiday Party

The largest of the *Salmonella* outbreaks occurred in Cape Girardeau. A holiday party was held by a manufacturing company on Dec. 20, 1991, for 330 employees and guests. The meal, provided by a part-time caterer, consisted of roast beef au jus, smoked turkey, au gratin potatoes, green beans, corn, raw vegetables and dip, sheet cake, cold spiced tea, bread and rolls.

A case was defined as an individual who consumed food prepared for the holiday party and subsequently had a stool culture positive for *Salmonella braenderup*, or developed diarrhea or two or more of

the following symptoms within 72 hours: abdominal cramping, vomiting, nausea, chills or fever. The investigation identified 88 persons who met the case definition, including six of 11 employees of the catering service. Onsets occurred Dec. 20–26, 1991. See Figure 1.

Positive stool cultures were obtained from 44 cases (50%). Forty-nine cases (56%) were seen by a physician and 12 (14%) were hospitalized, including two married couples who spent Christmas in the hospital. The most common symptoms were diarrhea (93%), abdominal cramps (84%), nausea (77%), chills (69%), fever (68%), and vomiting (47%).

(continued on page 2)

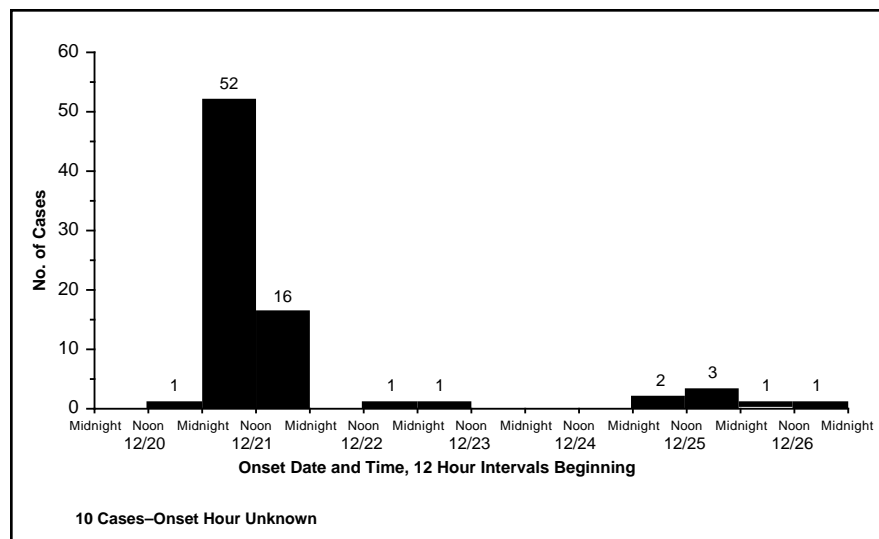


Figure 1. *Salmonella braenderup* outbreak associated with a holiday party by date and time of onset, Missouri, December 1991

Inside this Issue...

Page	
6	Waterborne Hepatitis A Outbreak
8	Changes to School Immunization Requirements
14	Changes in HIV/AIDS Laws
15	Custodians' Exposure to Asbestos Fibers
16	Group B Streptococcus Bacteriuria
18	Occupational Fatalities
20	Syphilis Emergency
22	Hepatitis A Epidemic in State
24	Polio Threat

(continued from page 1)

A total of 222 persons provided information regarding their food consumption. None of the individual foods served were statistically associated with illness. However, cases were more likely than well controls to have consumed two or more servings of the roast beef (OR=6.16, 95% CL 2.65 < OR < 14.53, $p=0.000002$, uncorrected Chi square). One of the culture-positive cases had consumed only roast beef. None of the roast beef was available for testing.

The catering service had no kitchen facilities of its own; it utilized a local church kitchen.

No relevant sanitation violations were noted at the church upon inspection. Twelve 18-pound beef roasts and six 10-pound turkey breasts were cooked in "shifts" during the day of the party. The meats and other foods were stored in the two domestic-type refrigerators available. The meal was then transported unrefrigerated for 25 minutes to the party site where it arrived at 5:00 p.m. There the food was held in a walk-in refrigerator, the roast beef was sliced and turkey sandwiches assembled. The meal was served from 7:00 p.m. until approximately 9:00 p.m.

The worker who sliced the roast beef was asymptomatic but had a positive stool culture. One of the owners of the catering operation was reported to have had a gastrointestinal illness during the two days prior to the party; however, she denied this and denied preparing any of the food for this event. Her stool culture was positive.

If one or more beef roasts were contaminated with *Salmonella braenderup* before cooking, then inadequate refrigeration and cooking temperatures, and/or cross-contamination from raw to cooked meats may have caused this outbreak. Alternatively, the beef may have been contaminated during slicing by the asymptomatic, culture-positive food-handler. The prolonged serving time might then have allowed multiplication of the organism.

Salmonella infantis at a Wedding Reception

The second largest *Salmonella* outbreak occurred among the guests at a catered wedding reception held on June 1, 1991, at a convention center in central Missouri and attended by about 300 people. (A detailed description of this outbreak appeared in the January-

February 1992 issue of *Missouri Epidemiologist*.) The meal was provided by a professional caterer.

A total of 25 cases were identified with onsets of illness June 1–4, 1991. See Figure 2. Stool cultures positive for *Salmonella infantis* were obtained from 10 cases (40%). One person was hospitalized. The cases were significantly more likely than controls to have eaten turkey (OR=5.45, 95% CL 1.19 < OR < 26.99, $p=0.01$, uncorrected Chi square) and potato salad (OR=5.20, 95% CL 1.22 < OR < 23.52, $p=0.009$, uncorrected Chi square). None of the food was available for testing.

Several problems with food preparation and serving may have contributed to this outbreak. The illness may have resulted from improper thawing of contaminated turkey and/or cross-contamination between the raw turkey and the potato salad, which were prepared on the same day, two days before the reception. While the refrigeration unit was in good working order, it is also possible that the large amount of hot food prepared in one day prevented rapid cooling. Finally, the water supply used to prepare the food was unsafe, with coliform bacteria too numerous to count.

Salmonella muenchen at a Barbecue

This outbreak followed a catered barbecue dinner served on Oct. 19, 1991, at a fraternal organization in Marion County. Approximately 50 barbecue dinners, consisting of ribs, potato salad, greens and bread; and an unknown number of rib sandwiches were served at the function.

A case was defined as a person who consumed food from the dinner and became ill with diarrhea within the next 72 hours, or had a stool culture positive for *Salmonella muenchen*. Thirteen cases were identified through health-care providers and interviews with the earliest reported cases. Illness onsets ranged from Oct. 19–21, 1991; the distribution

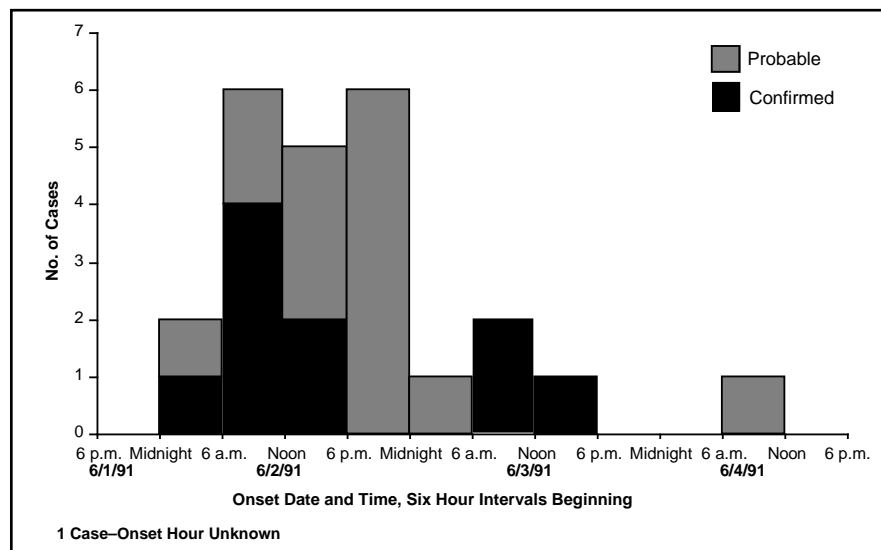


Figure 2. *Salmonella infantis* outbreak associated with a wedding by date and time of onset, Missouri, June 1991

is shown in Figure 3. Seven of the cases (54%) had positive stool cultures. Abdominal cramps were reported by 92% of the cases, fever by 85%, nausea by 75% and vomiting by 54%. Seven of the cases (54%) consulted a physician and three (23%) were hospitalized.

Thirteen well persons who had consumed the dinner were identified by the cases and interviewed as controls. All 26 persons interviewed had eaten the ribs. Consumption of potato salad and greens were statistically associated with illness. All of the cases and five of the controls (38.5%) had eaten potato salad (OR undefined, $p=0.0008$, Fisher exact 1-tailed test). Eight of the cases (62%) and two of the controls (15%) had eaten the greens (OR=8.80, 95% CL 1.03 < OR < 94.86, $p=0.0155$, uncorrected Chi square).

One of the two cooks involved in preparing the meal reported having had diarrhea five to six days prior to the meal but did not submit a stool specimen. The foodhandling practices described by the cooks would have permitted cross-contamination between the uncooked ribs, potato salad and/or greens. After the

potato salad was mixed it was stored in a deep roasting pan in a home-style refrigerator (which had no thermometer) overnight. The salad was then removed one-half gallon at a time and stored at room temperature for an unspecified amount of time while it was served. The greens were purchased commercially in cans. The cooks added pork jowl, cooked the greens for an unknown length of time and held them all day on a steam table.

This outbreak was very likely due to cross-contamination of the salad and greens with raw pork and the lack of time and temperature controls during food preparation and serving. Alternatively, the foodhandler who reported illness prior to the barbecue may have directly contaminated the foods.

Acute Gastrointestinal Illness at a Birthday Party

An outbreak of acute gastrointestinal illness occurred following a birthday party held in May 1991 in Jefferson County. The meal was catered by a restaurant and supplemented by chicken purchased and prepared at the party site by the host.

Of approximately 100 guests, 53 were contacted and interviewed. Twenty of them (38%) had become ill during the following two days with symptoms including nausea (95%), diarrhea (80%), vomiting (75%), abdominal cramps (65%), headache (55%), malaise (40%), chills (37%), fatigue (35%), and fever (17%). Average incubation period was 28 hours (range 8-46 hours). Average illness duration was 54 hours (range 12-96 hours).

None of the ill persons sought medical care or submitted stool specimens. No individual food was statistically associated with illness.

The symptoms, incubation period and duration of illness suggest infection with *Salmonella* or a viral agent such as Norwalk virus. Information about the food preparation procedures indicated that cross-contamination of other foods with *Salmonella* from the raw chicken, combined with improper holding temperatures at the party, may have caused this outbreak. Alternatively, the food may have been directly contaminated by a handler infected with a Norwalk-like virus.

Acute Gastrointestinal Illness at a Golf Tournament

A golf tournament was held in Boone County in August 1991, with a meal consisting of barbecued beef and chicken, baked beans, cole slaw, potato salad, rolls, tea and lemonade catered by a local restaurant. Within the next 6-54 hours, 21 of 26 attendees (81%) developed diarrhea. Other symptoms included nausea, cramping, fever, and vomiting. Four persons were seen by a physician. Twelve stool specimens from ill persons were negative for salmonella, shigella and campylobacter; due to lag time in reporting the outbreak, testing for viral pathogens was not possible. No leftover food was available.

Most of the attendees ate all the food items, so statistical analysis was inconclusive. According to anecdotal accounts, employees of the catering establishment ate the leftover meat and did

(continued on page 4)

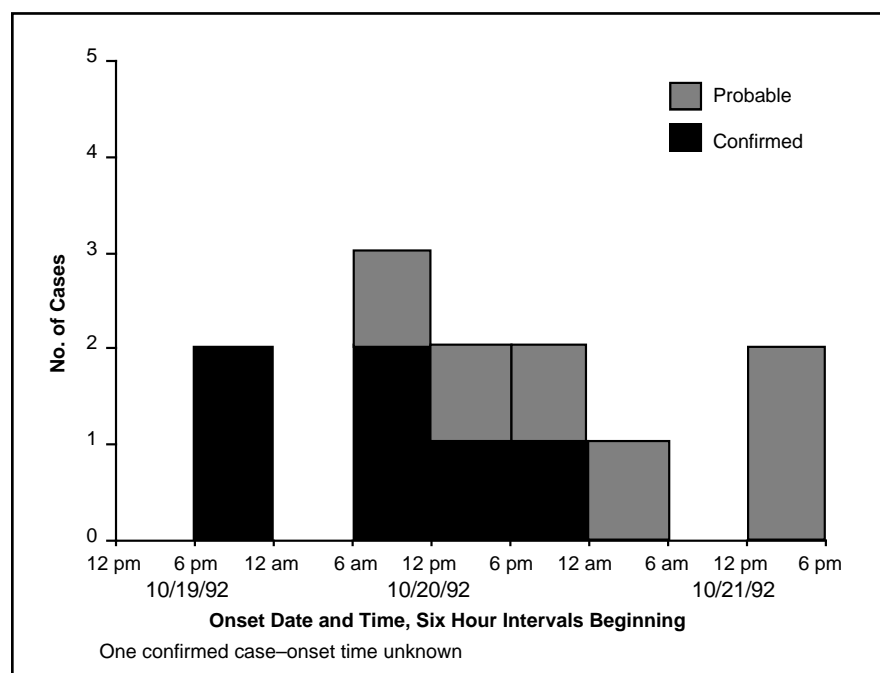


Figure 3. *Salmonella muenchen* outbreak associated with a barbecue by date and time of onset, Missouri, October 1991

(continued from page 3)

not become ill. No details regarding preparation procedures or times and conditions of transport and serving are available. Inspection of the establishment several days after the outbreak revealed no major problems with foodhandling equipment or procedures; however, followup visits revealed a problem with cooling procedures.

The causative organism and specific vehicle of this outbreak were not identified. However, the high attack rate among the affected group and the short, explosive course of the outbreak indicate a common source, most likely the meal. The incubation period and symptoms, as well as the negative stool cultures, would support a viral agent such as Norwalk virus.

Acute Gastrointestinal Illness from Leftovers

Two cases of acute gastrointestinal illness were reported from Cooper County following a business open house held on Oct. 1, 1991, catered by a meat-processing plant. One was hospitalized on Oct. 2 with vomiting, diarrhea, fever, chills, and aching. The other, a friend, had similar symptoms, also with onset Oct. 2. These two individuals had consumed leftover ham from the open house for lunch on Oct. 2 and become ill within three hours. The symptoms and incubation period were consistent with *Staphylococcus aureus* food poisoning. No clinical specimens were obtained, and the remaining meat was destroyed before samples could be taken. No other ill attendees of the open house could be identified. These illnesses apparently resulted from temperature abuse of the leftover ham.

Discussion

Catering operations vary greatly in size and sophistication of equipment and personnel. Two of these outbreaks were related to transient operations, including a part-time catering business with no permanent facilities and a fraternal or-

ganization where food was not normally prepared. Neither had been previously inspected by a sanitarian. In the other instances the catering establishments had been subject to inspection, including the two restaurants, the full-time caterer, and the meat-processing plant.

Time/temperature abuse and/or cross-contamination from raw meats contributed to at least four of these outbreaks, including all three caused by *Salmonella*. While time lags and temperature abuses during transport and serving may have contributed to the multiplication of organisms, most of the poor foodhandling practices occurred during prepara-

tion and storage. Caterers should be educated in the basic rules of food-service sanitation. Persons choosing a caterer should ask about the facilities and foodhandling practices, and when possible should check with the local health department regarding previous inspections.

Acknowledgements

Information for this report was provided by the local health departments in each county mentioned above and by the following Department of Health employees: Sue Tippen, Irene Donelon, Robert Maley, Douglas Dodson, Harvey Marx, and Dr. Carol Friedman.

Editorial Comment:

Food poisoning can cause minor abdominal distress, violent diarrhea and vomiting, and may lead to death. There are a wide variety of bacteria, viruses and parasites that in one manner or another may be transmitted by food. Many raw foods are known to be frequently contaminated by one or another potential pathogen. Human beings are driven by daily hunger to run the risk of food poisoning as often as three or more times per day. Food preparation in the home involves fairly small groups and if errors in food handling induce food poisoning it rarely comes to the attention of the public or public health authorities.

Food preparation in public facilities is regulated by the Department of Health but the number of sanitarians provided by the available state and local funding sources has never been adequate to provide a sufficient number of inspections to maintain the desirable level of food handling in public facilities. Catering businesses are very difficult to regulate. Many begin in homes and expand with the shortcomings and problems cited in the preceding article. Food handling by catering services is not regulated unless the service utilizes the same kitchen facility as one of the public facilities that falls under the regulations.

In the 1992 legislative session, a food-protection bill addressing these issues and others was introduced but it failed to get out of committee. The Department of Health is attempting to address these issues by seeking sponsorship for and supporting a comprehensive food-protection act in the legislature for 1993. In this legislation, provisions are made for a statewide permit system and some type of food-service education program. It is hoped that the passage of a statewide comprehensive food-protection program would help prevent future foodborne outbreaks.

It is likely that the average citizen holds the unwarranted belief that all food-service facilities, including catering services, are regularly inspected and approved by health authorities, but the current reality calls for the ancient Roman motto, "Let the Buyer Beware," until the laws are changed and financial resources are provided to the health agencies to permit the needed inspections.

Scombroid Fish Poisoning in Atlanta

Three members of one family and two members of another were treated at the emergency room of the same Atlanta hospital following ingestion of tuna steaks. Although the families were not acquainted, they purchased the fish steaks from a common source.

The first family purchased a 1 and 1/2 lb tuna steak at a local grocery store around 6:00 p.m. on May 3, 1992. The steak, which appeared to be fresh from all outward indications, was brought home, where it was rinsed under cold water, seasoned with lemon/pepper seasoning and honey-dijon salad dressing, and cooked on a grill for approximately 45 minutes. The fish was served hot from the grill together with a tossed salad, squash, and spaghetti. Within minutes after the meal, the three family members who ate fish developed severe headaches and flushing, which prompted them to go to the hospital emergency room. Immediately upon arrival, affected family members received Tylenol and IV Benadryl, which resulted in marked improvement of symptoms within 20 minutes of initiation of therapy. The patients were hospitalized overnight for observation and released the following day. A fourth family member, who did not eat the tuna fish, remained well.

The second family purchased a 1 and 1/3 lb tuna steak from the same store on the same day as the first family. The tuna was placed in their home refrigerator approximately 45 minutes after being purchased. The following evening the fish steak was removed from the refrigerator, rinsed under cold water, seasoned with ginger-teriyaki marinade, and placed on the grill. The fish was served hot from the grill along with baked potatoes, tossed salad, and green beans. Within 15 minutes of consuming the tuna, the husband and wife developed headaches and flushing. The child, who did not eat fish, was not affected. The Poison Control Center was called and the family was advised to seek medical attention at the nearby hospital emergency room, which was the same loca-

tion visited the previous evening by the other family. They were treated with IV Benadryl and Tylenol and dismissed with prescriptions for oral Benadryl and Tagamet.

Inspection of the store that sold the tuna steaks failed to reveal any major sanitation or temperature-control problems. The two coolers used for storage of fish were operating at 32° and 34°F, respectively. However, a tuna steak in the display case had a temperature of 40°F. Whether prolonged exposure to the latter temperature may have contributed to illness is problematic.

Editorial Note:

Histamine (scombroid) fish poisoning is associated with the consumption of scombroid fish, the most common of which are tuna, mackerel, bonito, and skipjack. Outbreaks have also been attributed to the non-scombroid fish mahi-mahi. The illness, which has an incubation period of five minutes to one hour, is thought to result from histamine and/or closely related substances together with inhibitors of histamine degradation produced in scombroid fish by the enzymatic decarboxylation of histidine by certain marine bacteria, particularly *Proteus* and *Klebsiella* species¹⁻³.

The most common symptoms include burning of the mouth and throat, flushing, headache, and dizziness. Abdominal cramps, nausea, vomiting, and diarrhea also occur in a majority of cases. Symptoms usually resolve in a few hours.

During the five-year period, 1983-87, nine percent (83/909) of reported foodborne outbreaks in the United States with confirmed etiology were due to histamine fish poisoning⁴. This type of fish poisoning is most common in coastal areas of California and Hawaii near where the fish are caught. However, modern transportation and refrigeration methods have made possible the wider distribution of fresh fish thereby increasing the possibility for the occurrence of

histamine fish poisoning in geographic areas more distant from the coast.

References

1. Geiger E, et al. The content and formation of histamine in fish muscle. *Arch Biochem*, 1944; 3:311.
2. Kimata M. The histamine problem, in Borgstrom E (ed): *Fish as Food*. New York; Academic Press, 1961, pp 329-352.
3. Taylor SL, et al. Histamine production by *Klebsiella pneumoniae* and an incident of scombroid fish poisoning. *Appl Environ Microbiol* 1979; 37:274.
4. CDC. MMWR Surveillance Summaries. Vol 39/No SS-1, March 1990.

This report was contributed by Eric Benning, M.D., Preventive Medicine Resident, Morehouse School of Medicine, assigned to Fulton County Health Department. Reproduced with permission from the Georgia Epidemiology Report, August 1992.

Missouri Editorial Note:

Twenty outbreaks of scombroid fish poisoning were reported along the eastern seaboard of the United States from Massachusetts to Florida in May 1992, affecting 74 individuals. All the cases were associated with ingestion of "fresh" tuna acquired from various retail sources including grocery stores, fish markets and restaurants. Tuna imported from Ecuador was implicated in 18 of the 20 outbreaks. An investigation by the Food and Drug Administration (FDA) found that transport and distribution of these fish within the United States alone had taken 10-14 days. Irregularities in shipping and handling time and temperature were identified in Ecuador as well, and the FDA has requested that the Ecuadoran government take steps to assure compliance with product safety regulations.

Suspected cases of scombroid poisoning should be reported as rapidly as possible to the Missouri Department of Health at (800) 392-0272.

Waterborne Hepatitis A Associated with a Church and School

Michael Fobbs, B.A.
Mahree Skala, M.A.
Bureau of Communicable Disease Control

Introduction

On May 1, 1992, the Newton County Health Department contacted the Southwestern District Communicable Disease (CD) Coordinator because a child who attended a church and school near Racine had hepatitis A. Additional suspect cases were reported among other persons who attended the same church and school, including foodhandlers working in Racine and Carthage. A common source outbreak was suspected.

Background

Racine is a small town in Newton County (population <300). The church minister is a community leader as well as the spiritual leader.

The church has approximately 150 official members, but interviews with individuals in the community suggested that regular attendance is about 400 persons from Racine and nearby communities. The church has a school on the same grounds with which it shares water and sewage systems. The school has 93 students in grades 1–12.

Methods

On May 6, 1992, a Centers for Disease Control and Prevention Epidemiology Intelligence Service (EIS) Officer and personnel from the Bureau of Communicable Disease Control went to Racine to assist the district CD coordinator and the local health department. Interviews were conducted with cases and members of the church and school in Racine and several surrounding communities. The minister was interviewed about church-associated events where food was served.

A case control study was started by the EIS officer. Controls were to be selected from case neighborhoods to match for as many factors as possible. The planned

study could not be continued due to lack of cooperation from cases and resistance in the community.

The district CD coordinator and a local sanitarian visited the local grocery store in Racine and interviewed personnel about food-preparation procedures.

Water samples were taken by the local sanitarian on May 5, 1992, from the church/school well, the well on the campground located next to the church, the local store and other sites in the community. They were sent to the Southwest-

ern Branch of the State Public Health Laboratory in Springfield for coliform testing. A second group of samples were taken on May 7, 1992, for fecal coliform testing.

The Department of Natural Resources (DNR) was contacted on May 11, 1992, regarding sampling of the church and school water supply. Dye tracing studies were conducted by DNR. On June 4, 1992, the Division of Geology and Land Survey injected dyes into four septic systems at the church, school and campground located next to the church.

Table 1. Hepatitis A Cases by Town of Residence, 1992

Town	No. of Cases	
	Confirmed	Suspected
Carterville, MO	1	0
Carthage, MO	1	1
Highlandville, MO	1	0
Jackson, MS	1	0
Joplin, MO	7	0
Neosho, MO	8	0
Racine, MO	8	4
Seneca, MO	6	1
Wellington, KS	1	0
Unknown	1	5
	35	11

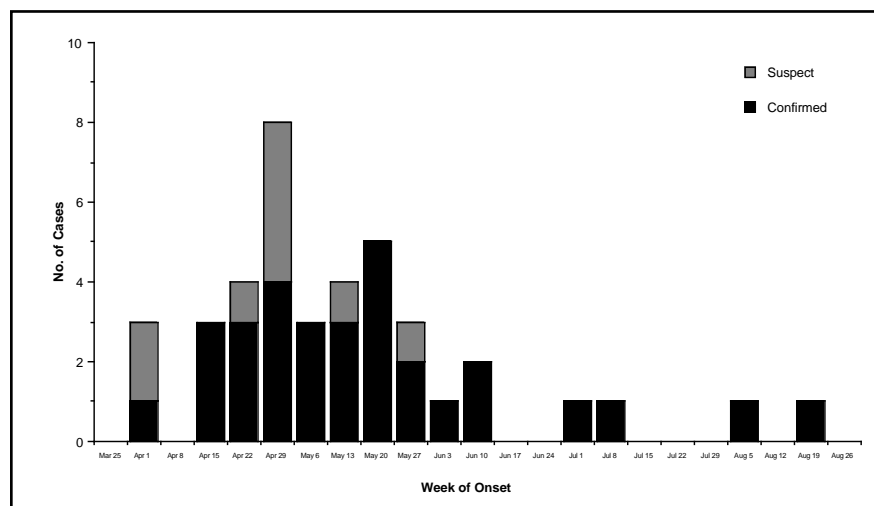


Figure 1. Hepatitis A outbreak cases with known onset, Racine, Missouri, 1992

Results

The outbreak involved a total of 46 cases with onset between April 1, 1992, and Aug. 21, 1992. See Figure 1. There were 35 cases confirmed by positive HAV-IgM tests and 11 suspect cases associated with exposure to the church and school. Ages ranged from 2 to 62 with a mean of 23.2. There were 19 females and 27 males. Confirmed and suspect cases were residents of nine different towns. See Table 1.

Four of the confirmed cases were hospitalized. Two of the confirmed cases worked as foodhandlers in fast food restaurants, one worked for a food distributor, one worked in a nursing home and one worked in a hospital as a nurse's aide.

Of the 35 lab-confirmed cases, 28 had the opportunity to consume water and/or food at the church and school. No one food event was attended by a majority of the cases interviewed.

The seven other cases included a Racine resident whose spouse attends the church, three others whose family members attended the church or school and three whose illness resulted from personal contact with church-related cases.

The minister remembered a school picnic on May 1, 1992, and a church fish fry that occurred in the middle of April. He stated there were no other events involving food in the preceding two months.

Interviews by the EIS officer brought to light several additional events where food was served. A roof re-shingling occurred on March 15, 1992. Up to 150 people were served fruit salad, spaghetti and rolls at that event. A travelling minister held a revival from March 25 thru April 1, 1992, at which food was served. A wedding with a rehearsal dinner and a reception were held at the school April 2–3, 1992. Approximately 200 guests, some from out of state, attended the wedding and reception.

A cursory inspection of the local grocery store on May 11, 1992, showed no

hand sink in the food-preparation area and other problems. At a previous inspection in December 1991, because of a lack of towels and other problems, the store scored an 81. A score of 70 out of a possible 100 is considered passing. The only foods served, broasted chicken, hot dogs, burritos and potato wedges, were heated and unlikely to serve as a vehicle for transmission of hepatitis A. All foods other than the broasted chicken were prepackaged.

Water samples taken on May 5, 1992, from the church, school and campground were confluent with coliforms. The presence of coliforms or fecal coliforms marks a sample as unsatisfactory. Samples taken May 7, 1992, from the church/school well were found to have an estimated 1200 fecal coliforms/ml and from the school kitchen an estimated 1300 fecal coliforms/ml. The grocery store samples were satisfactory.

Very strong concentrations of the dye were recovered from the two wells after the septic systems were injected on June 4, 1992. The rapid recovery interval of less than five days indicated a hydrologic connection between the wells and at least one of the septic systems allowing a very rapid migration of fluids.

Control Measures

Information about hepatitis A was given to the manager of the local store. Handwashing was stressed. All foodhandlers and their household contacts received immune globulin (IG) at the clinic on May 8, 1992.

Many of the personal contacts of known cases refused IG and 11 suspect cases refused to have serologic testing.

Two cases worked in fast food restaurants. The restaurants were inspected by sanitarians and personnel were given education in proper handwashing and foodhandling techniques. An IG clinic was held for the first fast food restaurant on May 6, 1992; 66 doses were given to employees as a preventive measure. The sanitation inspection scored 78. The in-

spection showed good handwashing facilities, and no major flaws. The case's general hygiene practices were determined to be good. An IG clinic was held on June 3, 1992, for the second restaurant. IG was given to 49 employees. A previous inspection in February 1992 had scored this restaurant at 87. The restaurant scored an 89 on its reinspection on June 2, 1992, with both handwashing facilities and temperature-holding systems acceptable. Local surveillance was enhanced to encourage early detection of restaurant-associated cases.

An IG clinic was held May 8, 1992, for members of the church and school at a public school near Racine. The clinic was organized by the Newton County Health Department. Help was supplied by the Southwestern District Health Office, and Jasper County and Joplin City health departments. Approximately 100 injections were given. Attendance was low despite posting signs at the local post office and the store. Newspapers, radio and other media in the surrounding communities also provided public service announcements about the clinic.

The local sanitarian talked to the minister on several occasions regarding problems with the water supply and suggested introducing bleach into the well after the first water samples were confluent with coliforms. She also recommended using alternative water sources for drinking and handwashing. The minister poured five gallons of chlorine bleach into the church/school well on May 8, 1992.

DNR issued a directive on May 12, 1992, to boil water before consumption. Reports of continued use of the water supply at the church prompted an abatement order from DNR that was issued on June 3, 1992, disallowing the use of the church and school wells until the problem of bacteria in the water could be resolved.

The indication of a hydrologic connection between the wells and at least one of
(continued on page 8)

(continued from page 7)

the septic systems prompted DNR to issue a directive requesting an engineering report on the wells and sewage disposal system.

A new well was drilled and cased during the week of July 7, 1992, under the supervision of DNR. The well at the campground across the street was chlorinated.

Discussion

Based on the epidemiologic and laboratory evidence, we concluded that the well water at the church and school most likely served as the vehicle for this outbreak. The water was probably contaminated with sewage containing virus from the stool of infected persons. Food was considered as a vehicle of transmission, however, no clear majority of cases could be assigned to any one event although the epidemiologic curve is suggestive of a common source outbreak. See Figure 1 on page 5.

A statistical analysis, which might have proven associations between the church or school and infection with hepatitis A based on a case control study, was not possible.

Although this religious group is reluctant to utilize modern medical facilities or seek medical care, they do hold jobs in the communities around Racine. They also perform missions delivering food and services to indigent people and prisoners in the surrounding communities. Cases worked in fast food restaurants, in food processing/distribution, in a nursing home and in a hospital. This created the potential for secondary foodborne or institutional outbreaks of hepatitis A. No secondary outbreaks have been detected to date as a result of these cases.

Efforts by the Department of Health and the local health department to implement control measures were not well-received by the church members. IG is protective against hepatitis A if injected within two weeks after exposure. The

IG clinic held on May 8, 1992, for church and school members was poorly attended, probably in part due to our not being allowed to hold the clinic at the church or school or to notify directly the members.

This outbreak illustrates some of the problems that can occur when communities do not comply with accepted public health control measures.

Changes to School Immunization Law Mumps Added to School Requirements for 1993-94

Bernard Malone
Division of Environmental Health
and Epidemiology

Marilyn Kemna
Bureau of Immunization

On July 6, 1992, Governor Ashcroft signed into law legislation dealing with immunization requirements for school attendance. There are four specific provisions under this legislation:

- Requires immunization against mumps.
- Reduces the 30-day "grace period" for school attendance prior to immunization to 15 school days.
- Eliminates philosophical exemptions. However, religious and medical exemptions will be permitted.
- Allows disclosure and exchange of information and records pertaining to the immunization status of persons against childhood diseases without written release of parent or guardian authorizing such disclosure to persons who have a need to know such information.

The Department of Health has begun the process to promulgate rules for this legislation. However, the rulemaking process requires three to four months for administrative review and for comments from the general public. **Therefore, all**

It also illustrates the need for a concerted approach by multiple agencies directed through one local official, since some environmental outbreak control measures were delayed or met with resistance in the community because of a lack of coordination with local officials. Local agencies often have information or mechanisms for education through the community infrastructure not available to statewide organizations.

of the provisions except that dealing with the release of information will not be effective until the 1993-94 school year.

The provision regarding release of information will require no new rules and health-care providers may now disclose information about the immunization status of children to:

- Employees of public agencies, departments or political subdivisions
- Health records staff in school districts and child care facilities
- Persons other than public employees who are entrusted with the regular care of those under the care and custody of a state agency, including but not limited to, operators of day care facilities and adoptive or foster parents
- Health-care professionals, including physicians

This important legislation provides school health officials and others alternatives for obtaining the immunization records of students by eliminating the need for obtaining parent or guardian written authorization. In addition, more students will be protected against another vaccine-preventable disease, mumps, thus reducing the pool of susceptibles in Missouri.

Bimonthly Morbidity Report, July/August 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Bimonthly Morbidity Summary, July/August 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Bimonthly Morbidity Report, September/October 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Bimonthly Morbidity Summary, September/October 1992

(not available electronically—a paper copy can be obtained from the Office of Epidemiology at (573) 751-6128)

Department of Health Strategic Plan for the Year 2000

Linda Hillemann, M.S.W.
Office of Planning

The Department of Health released on Dec. 9, 1992, its second edition of the *Strategic Plan for the Year 2000*. It will be published in two volumes: *Volume I: The Public Health Agenda for the 1990s* and *Volume II: Healthy Missourians 2000*. Volume I focuses on the strategic goals and objectives that are key to public health policy during the 1990s. Volume II is more operational. In it you will find program-specific objectives within chapter divisions that for the most part parallel the national planning documents: *Healthy People 2000* and *Healthy Communities 2000*.

In 1987, shortly after having achieved cabinet status in Missouri government, the Department of Health published its first edition of the *Strategic Plan for the Year 2000*. For the first time, the department established goals and objectives within 13 priority areas and committed its efforts toward achieving them by the turn of this century.

In 1990, the Department of Health undertook an evaluation of progress toward the goals that had been established four years earlier. We were pleased with the progress made toward accomplishing many of the objectives, but progress was uneven and some of the goals were written in ways that were difficult to measure. In addition, significant public health programs were not adequately covered by the objectives. Problems were identified and a revised approach was developed for the second edition of the plan.

The Department of Health also wished to respond to important national activities shaping public health policy for the 1990s. The United States Public Health Service had recently published *Healthy People 2000*. Shortly thereafter, *Healthy Communities 2000: Model Standards* was published by the American Public Health Association to be a state/local implementation tool for the national health objectives contained in *Healthy*

People 2000. For this reason, the Department of Health adopted *Healthy Communities 2000: Model Standards* as the key and guiding document for use in its planning process and has recommended that local health departments in Missouri do the same.

In developing *Healthy Missourians 2000*, the Department of Health did a comprehensive assessment of its organizational strengths and weaknesses, analyzed the health status of the population, studied significant future trends, sponsored a strategic planning session with representatives of many important health and service organizations in Missouri to develop strategic goals, established workgroups with participants from the broader community to develop objectives, and held public hearings on the draft to obtain citizen input on our policy directions. We believe this plan expresses widely held priorities for the direction of Missouri public health policy for the 1990s.

This document was not designed to sit on a shelf. The Department of Health will use the goals and objectives in its

day-to-day management. Personnel expectations, budget, and legislative initiatives all will be guided by the priorities expressed in the plan. Triennial progress reports and updates, including a public process to assist us in evaluation, will be published. A management information system is being developed to assist in managing resources according to stated priorities. More than anything else, however, this process is being used to help staff become strategic thinkers – to continue to scan the environment for new trends, always considering how they will impact mission of the department and how to capitalize on or even create the trends that will lead the department to its goals.

Volume I is currently available. Volume II is expected to be published in January 1993. For information about ordering either of the volumes, contact:

**Linda Hillemann
Chief, Office of Planning
Department of Health
1738 East Elm
Jefferson City, MO 65101
Ph: (314) 751-6005.**

Laboratory Courier Service

A statewide courier service is now in place to pick up and deliver samples to the State Public Health Laboratory in Jefferson City. Due to the imposition of higher standards for the submission of water samples by EPA, ongoing concerns with the affects of heat, humidity and extreme cold on blood and filter paper blood spot specimens, and the recent loss of intra-state bus service to Jefferson City, some system was needed to transport reliably samples and specimens to our facility.

At this time, approximately 70 hospitals, clinics, district and area health offices and local health departments are used as pick-up sites. Every facility is visited Monday through Friday with samples delivered to the State Public Health Laboratory within twelve hours of pick up.

We look for this service to facilitate the submission samples and specimens to the State Public Health Laboratory in a manner that best preserves their integrity, thereby improving the quality of our testing and assuring the validity of the test result. We hope, too, that the system proves to be more reliable and timely than conventional ways of sending specimens with a minimum of inconvenience to the user.

Senate Bills 511 & 556 Pass With Revisions

Bureau of AIDS Prevention

A combined bill including Senate Bills 511 & 556 sponsored by Senators Jet Banks and Harry Wiggins became effective August 28, 1992.

This law concerns infectious diseases. It revises the civil damages awarded for unauthorized disclosure of records or information concerning infection with HIV, the virus implicated in causing AIDS. Negligent disclosure will incur civil liability for liquidated damages of \$1,000 or actual damages, whichever is greater, while willful, intentional, or reckless disclosure will incur liquidated damages of \$5,000 or actual damages, whichever is greater. In such cases, a court may order injunctive or other relief.

Physicians, nurses, dentists, podiatrists, hospitals and nursing homes will abide by federal standards regarding protection against the spread of HIV, hepatitis B, or other blood-borne infections. Health-care providers with exudative lesions or weeping dermatitis that may come into contact with patients will not perform invasive procedures.

As a condition of licensure, health-care facilities will provide periodic training in infection-control procedures to patient-care personnel in accordance with regulations issued by the respective licensure agencies. Physicians, nurses, dentists and podiatrists who perform invasive procedures will receive appropriate training in infection control.

If a physician, nurse, dentist or podiatrist discriminates against a patient who discloses his or her HIV infection or requires HIV testing as a condition of treatment before such a disclosure, he or she will be subject to licensure disciplinary action. The law states that current federal assessment of the risk posed by HIV-infected health-care practitioners does not justify mandatory testing of health-care providers, but those who perform invasive procedures are advised to know if they are infected with HIV or hepatitis B.

The Department of Health will establish a voluntary evaluation process for physicians, nurses, dentists and podiatrists infected with hepatitis B virus or HIV who perform invasive procedures, using an expert review panel appointed by the director of the department. Such evaluation will be done with the infected practitioner's consent. The department will develop uniform evaluation criteria consistent with federal guidelines for placing restrictions on the practice of a provider's medical practice. An expert panel's recommendations will be based on the premise that HIV or hepatitis B infection does not itself justify limiting a practitioner's duties. Information obtained through the review process will be confidential, with any practice restrictions disclosed only to those in health-care facilities who have a reasonable need to know. Any practice restrictions imposed on the physician, nurse, dentist, or podiatrist will be monitored by the health-care facility where he or she practices or, for community-based providers, by the Department of Health. Violation of practice restrictions will subject the practitioner to licensure disciplinary action. The Department of Health will periodically review established standards concerning transmission of HIV and hepatitis B and modify its regulatory guidelines accordingly. Also, the department may intervene when there is reason to believe that a health-care provider poses a grave and unjustifiable risk of injury to others.

The law also repeals the existing law governing notification of public safety and emergency medical personnel regarding potential exposure to infectious diseases through a patient transported to or from a hospital or nursing home. Instead, the Department of Health will ensure that emergency medical or public safety personnel or "good samaritan" first aid providers are notified of potential exposure to communicable disease as a result of providing first aid or transporting a patient to a hospital or state medical facility.

Those providing emergency treatment or transportation who suspect potential exposure to communicable disease through a patient may file a request form concerning the incident with the hospital, state medical facility or a designated public health official. The emergency care and "good samaritan" first aid providers will be given a copy of the request form, which will describe HIV-related confidentiality requirements. A hospital will notify a trained emergency care provider upon his or her request and a designated public health official will notify a "good samaritan" first aid provider upon his or her request. Notification will take place as soon as practicable and within 48 hours.

The part of this bill concerning notification of potential exposure will not authorize mandatory testing of patients or disclosure of identifying information about the parties involved. Emergency response personnel must treat any patient regardless of his or her communicable disease infection. The Department of Health will promulgate rules to implement this portion of the bill.

The Department of Health will also promulgate rules requiring pre-admission testing for tuberculosis for all nursing home residents and annual tuberculosis testing of health-care workers and volunteers in nursing homes and of residents and staff of state correctional centers.

These Department of Health rules are expected to be ready in draft format by the end of January 1993.

If you have questions concerning this information, please contact the Bureau of AIDS Prevention at (314) 751-6438.

NOTE: Within this synopsis, health-care workers, providers or practitioners include physicians, nurses, dentists and podiatrists.

Custodians' Exposure to Asbestos Fibers: A Health Hazard or Not?

Terry L. Hopper

Art Wickman

Bureau of Environmental Epidemiology

Background

There is much speculation and many assumptions have been made as to the exposure of custodians to asbestos fibers. Because of the nature and location of their work, it is assumed that their exposure is significantly higher than that of other building occupants. It is also assumed that the condition of the asbestos-containing material (ACM), especially thermal system insulation (TSI), is an important factor affecting fiber level. Neither of these assumptions has been adequately investigated. The Environmental Protection Agency (EPA) and the states, through a variety of means, are attempting to advise the decision makers. The results of this study may help channel those efforts into the most productive areas where the exposure and consequent risk are potentially the greatest.

The Department of Health (DOH), Bureau of Environmental Epidemiology (BEE), has a continuing interest and commitment to reducing asbestos exposures in political subdivisions. Since 1987, BEE has been working with political subdivisions to determine the presence and condition of asbestos in their facilities. This has been accomplished by on-site visits, inspections, distribution of questionnaires and informational literature, telephone consultations, and other technical assistance. The DOH is the lead agency for the state asbestos program in accordance with section 701.122, RSMo. This legislation requires all political subdivisions within the state to identify all friable and non-friable asbestos-containing building materials located in buildings owned, leased or operated by the political subdivision. BEE, upon request, performs asbestos inspections. To date, BEE has inspected 239 political subdivisions with

over 2,900 buildings containing more than 19.5 million square feet of floor space.

Method

The purpose of this project was to study the exposure of custodial employees to airborne asbestos fibers under a variety of typical work conditions. This involved assessing the daily personal exposure of selected volunteer custodians in political subdivision facilities with ACM. The ACM were in varying states of repair to include at least significantly damaged TSI and undamaged TSI.

During this project, special effort was made to study activities that may result in increased exposure. These included the cleaning of areas where asbestos fibers were present in dust, stripping/buffing of asbestos-containing floor tile, maintenance events involving disturbance of ceiling tiles, disturbing TSI, and other routine maintenance activities. The transmission electron microscopy method (TEM) was used to analyze airborne asbestos fibers in order to quantify accurately exposure.

The industrial hygienist assigned to this project was responsible for identifying political subdivision facilities that met the requirements of this study. Requirements include selection of buildings with ACM in varying states of repair to include significantly damaged TSI and undamaged TSI, custodians willing to participate in the study, and pre-study interviews with custodians to ascertain the nature of routine activities expected during the study period. DOH maintains detailed records on approximately 175 cities, towns, and counties that have had their facilities inspected for asbestos. The study facilities were selected from among these facilities.

Six sites were selected based on the presence of ACM in custodial areas and the willingness of full-time custodians to participate. At each site two employ-

ees were monitored for two separate three-day periods during nonconsecutive weeks. The intent was to include representative periods during which any episodic exposure would most likely be covered.

Personal air-sampling pumps were worn by the custodians to monitor their exposure during an eight-hour work day. High volume samples were used to sample the air of each area a custodian was working in during his shift. Individual eight-hour samples were taken with personal air-sampling pumps and the collected fibers analyzed by TEM. Short duration episodic exposures were evaluated as they occurred using high volume pumps for space air sampling. TEM analysis was used for these samples as well. These samples were sent to QuanTEM Laboratory in Oklahoma City, Oklahoma for analysis.

Results

A total of 138 samples were collected, of which 47 (34%) were personal samples and 91 (66%) area samples. Seventeen samples (17%) were rejected as too dirty to count using the TEM analysis by direct preparation. The remaining 121 samples consisted of 38 personal samples and 83 area samples. There were no asbestos fibers found in 99 (81%) of these samples. Results indicated that six of the personal samples and 16 area samples had detectable asbestos fibers. Of all these samples, only one personal sample had levels slightly above the Occupational Safety and Health Administration (OSHA) time-weighted average of five microns or greater. The custodian's work during the collection of this sample was as follows: sweeping, dust mopping, dusting, stripping vinyl asbestos floor tiles and miscellaneous activities. From the investigator's observation of the custodian during this time period, the elevated concentration of asbestos fibers was most likely re-

(continued on page 19)

Group B Streptococcus Bacteriuria in Missouri

Marty Huber, R.N.

Bureau of Communicable Disease Control

The significance of Group B streptococcus (GBS) bacteriuria has been debated intermittently in professional articles and letters to medical journals over the past several years. Some writers characterize GBS as normal flora in the urinary tract.¹⁻⁴

Several writers feel strongly that GBS bacteriuria is a cause for concern primarily in pregnant women, as it is implicated in pre-term labor and delivery and/or premature rupture of membranes.⁵⁻⁷ Others feel that even in pregnancy, the role of GBS bacteriuria is equivocal, pointing out that 15–40% of pregnant women are colonized in the vaginal and/or rectal area with GBS, and subsequent contamination of the urinary tract is therefore almost impossible to avoid.⁸⁻¹¹ Such writers also note that usually these urinary tract infections in pregnant women are asymptomatic.

The Missouri Department of Health is participating with five other sites throughout the nation in a study of invasive bacterial infections caused by four organisms, one of which is GBS. The Centers for Disease Control and Prevention in Atlanta is conducting the study. The project involves active surveillance, which requires telephone contact bi-weekly with all commercial microbiology laboratories throughout the state and all hospital microbiology laboratories except some non-participating hospitals in Kansas City. Initial contacts with laboratories brought forth many comments expressing satisfaction that finally someone would be looking into the morbidity of GBS bacteriuria. While an **invasive** infection is defined as a culture-positive body substance from a **normally sterile site**, and by definition would not include the urinary tract, it was decided to do a short-term evaluation of GBS bacteriuria.

Three hundred and three urine cultures positive for GBS were reported from 60 laboratories. A total of 283 were reported during the three-month period of the bacteriuria study, and the remaining

20 were reported over a nine-month period as coexisting infections with those from normally sterile sites. All were noted as being at least clean catch specimens, with 73 being catheterized specimens. As has been noted in previous studies, the preponderance of the 275 patients over the age of two years were female, with 238 females (86.5%) and 37 males (13.5%). Among 28 children less than two years of age, there were an equal number of males and females.

Of the 23 newborns (0-3 days of age), six (27.3%) also had GBS bacteremia, and one of these six also had GBS meningitis. All six newborns survived these invasive infections after vigorous intravenous antibiotic therapy and prolonged stays in neonatal intensive care units.

One baby, 32 days of age, had GBS meningitis and also had a positive urine culture, reflecting a generalized septic condition. This infant also survived after many days in a pediatric intensive care unit.

There were four children (six months to two years of age) with GBS bacteriuria, all of whom survived after several days hospitalization. These four were hospitalized in the same hospital during a period of three months, and there was no known connection between the children. One child also had GBS otitis media, and one had *Haemophilus influenzae* pharyngitis along with GBS bacteriuria.

There were eight (2.9%) persons greater than two years of age whose GBS bacteriuria progressed to septicemia. Two were diabetic and one other had end stage renal disease. All survived the infection after many days of IV antibiotic therapy.

One additional adult had an ascending GBS bacteriuria and developed GBS pyelo-nephritis. One other adult had concomitant GBS pleuritis. Both of these persons survived.

Of the 282 persons whose race was known, 267 (94.7%) were white and 15 (5.3%) were black. While this propor-

tion differs from the Missouri population as a whole, it must not be misconstrued as a meaningful statistic in this small study.

Of the 275 persons greater than two years of age, 159 (57.8%) were greater than 70 years of age. There were 67 in their 70s, 59 in their 80s, and 33 in their 90s. One hundred thirteen (41.1%) of those greater than two years of age were residents of nursing homes.

Of the 49 women of childbearing age (under 50 years of age) whose pregnancy status was known, 18 (36.7%) were pregnant at the time they had GBS bacteriuria. Gestational age ranged from 8 to 40 weeks. Six mothers were admitted to the hospital in preterm labor (2–13 weeks early). Of the 16 where the outcome of the pregnancy is known, 13 (81.3%) had healthy babies with no signs of GBS infection. One mother who had GBS bacteriuria at eight weeks of pregnancy lost her baby at that time. Two mothers whose urine was positive for GBS during labor delivered babies who had positive GBS body swabs and one of these was clinically ill. Both these babies survived.

Among the 303 persons with bacteriuria, there were 18 (5.9%) episodes of GBS bacterial complication. In addition, although the causal connection is less clear, there were six preterm labors, one miscarriage, and one clinically ill newborn. It seems clear that GBS bacteriuria does involve significant morbidity.

References

1. Murphy A, Shaw R, McAllister TA. Significance of Group B Streptococci (*Strep. agalactiae*) in Children's Urinary Tract Infection (letter). *Lancet* 1987; 1:98-9.
2. Persson, KMS, Grabe M, Kristiansen P, Forsgren A. Significance of Group B Streptococci in Urine Cultures from Males and Non-pregnant Females. *Scand J Infect Dis* 1988; 20:47-53.

(continued on page 17)

(continued from page 16)

3. Lohr JA. Group B Streptococcal Urinary Tract Infections (letter). *Ped Infect Dis J* 1990; 9, 2:150,1.
4. Haft RF, Kasper DL. Group B Streptococcus Infection in Mother and Child. *Hosp Pract* 1991; 26, 2:111-34.
5. Daugaard HO, Thomsen AC. Group B Streptococci in the Lower Urogenital Tract and Late Abortions. *Am J Obstet Gynecol* 1988; 158:28.
6. Moller M, Thomsen AC. Rupture of Fetal Membranes and Premature Delivery Associated with Group B Streptococci in Urine of Pregnant Women. *Lancet* 1984; 2:69.
7. Thomsen A et al. Antibiotic Elimination of Group B Streptococcus in Urine in Prevention of Preterm Labor. *Lancet* 1987; 1:591.
8. Benenson AS, Editor. Control of Communicable Diseases in Man. 1990; 418.
9. Dinsmoor MJ. Group B Streptococcus Still Poses a Challenge. *Contemp OB/GYN* 1990; May:93-104.
10. American College of Obstetricians and Gynecologists. *Precis IV* 1990; 104.
11. Hueston WJ. Prevention and Treatment of Preterm Labor. *AFP* 1989; 11:139-146.

State Public Health Laboratory Report

Newborn Screening — Hypothyroidism, Phenylketonuria, Galactosemia and Hemoglobinopathies

James Baumgartner, B.S., M.B.A., Chief, Metabolic Disease Unit

	Jul 92	Aug 92	Total YTD
Specimens Tested	11,097	9,536	77,420
Initial (percent)	67.8%	68.2%	52,989
Repeat (percent)	32.2%	31.8%	24,431
Specimens: Unsatisfactory	105	118	947
HT Borderline	530	471	3,812
HT Presumptive	24	15	145
PKU Borderline	43	18	149
PKU Presumptive Positive	0	2	5
GAL Borderline	68	49	338
GAL Presumptive Positive	0	3	18
FAS (Sickle cell trait)	108	89	764
FAC (Hb C trait)	27	27	208
FAX (Hb variant)	16	18	139
FS (Sickle cell disease)	5	8	26
FSC (Sickle C disease)	3	0	11
FC (Hb C disease)	0	0	6

HT = Hypothyroidism, PKU = Phenylketonuria, GAL = Galactosemia, Hb = Hemoglobin, YTD = Year to Date

New HIV Consultation Rules

*Kevin Gipson
Bureau of AIDS Prevention*

On April 14, 1992, the Department of Health filed an order of rulemaking with the Secretary of State's office to rescind the current HIV consultation rule and proposed promulgation of two new rules entitled HIV Test Consultation and Physician HIV Test Consultation and Reporting.

The new rules regulate the content of HIV counseling for physicians separate from non-physicians. They prescribe in detail what shall be contained in the counseling sessions performed by both physicians and non-physicians.

The Physician HIV Test Consultation and Reporting rule recognizes that physicians use the HIV test as a diagnostic medical test and allows physicians to tailor the counseling session to meet the clinical situation.

The HIV Test Consultation rule regulates in greater detail the content of HIV counseling sessions performed by non-physicians. Non-physician health care professionals who perform HIV consultation and blood sampling under the direction of a physician operate under orders signed by the physician. In the case of a hospital, the non-physician operates under the policies and procedures approved by the medical staff.

These new rules also clarify physician reporting requirements. HIV infection is reportable by law to the Department of Health regardless of who performs the HIV antibody test. In addition, the rules remind all parties that increased emphasis should be placed on partner notification and the use of public health personnel to expedite early referral to medical services for persons with HIV.

The proposed rescission and new rules became effective December 3, 1992.

A copy of the proposed rules can be obtained by calling the Bureau of AIDS Prevention at (314) 751-6438.

Death on the Job: Can Occupational Fatalities be Prevented?—Missouri Department of Health Launches New Occupational Fatality Prevention Program

Thomas D. Ray
Bureau of Environmental Epidemiology

In October 1991, the Centers for Disease Control and Prevention National Institute for Occupational Safety and Health (CDC-NIOSH) entered into a cooperative agreement with the Missouri Department of Health, Bureau of Environmental Epidemiology, to fund a traumatic occupational fatality surveillance and intervention program. The program is called the Fatal Accident Circumstances and Epidemiology (MO FACE) Program.

Since the establishment of the statewide surveillance system on June 1, 1992, the program has received notification of 48 occupational fatality incidents claiming 50 lives. Causes of death are as follows: eight falls from elevation, four electrocutions, four confined space entry, six incidents involving moving motor vehicles, three by natural causes and 14 by other miscellaneous causes. Nine fatalities involved farm tractors running over or onto the victim. Forty-six of the victims were male (92%) and four were female.

Although the development of a traumatic occupational injury surveillance system and the collection of data for epidemiologic analysis are initial priorities for the MO FACE program, a major focus is to recommend preventive measures. These include behavioral change, prevention education, use of existing and development of new personal protective equipment, and passive engineering solutions.

The MO FACE program is currently conducting investigations in three major areas of occupational fatalities: falls, electrocutions, and confined space related (oxygen-depletion, toxic/flammable atmospheres, physical hazards).

The program has completed six investigations and is in the process of finishing three fall, four confined space and one electrocution related investigations. A brief description of some of these investigations follows:

Fall from Moving Refuse Collection Vehicle

A refuse collector was riding on the right rear side of the vehicle when apparently his feet slipped from the riding platform. The victim lost his grip from the hand holds and fell striking his head on the street curb. Cause of death was determined as blunt trauma to the head. To prevent similar incidents, the program recommends that employers:

- Install a safety line that attaches to the rider's safety belt any time he rides on the vehicle.
- Provide a non-skid platform for the collectors to ride on.
- Require the use of safety shoes or boots with non-skid soles.

Fall From Working Platform and a Fall From a Steel Beam at Two Construction Sights

Both victims were iron-workers, one installing sheet metal siding from a raised working platform on a large warehouse facility and the other welding bar joists together. Both apparently lost their balance and fell more than 20 feet. Both received massive head injuries. Neither victim was wearing any fall-protection devices. To prevent similar incidents, the program recommends that employers:

- Provide fall-protection equipment to all workers who may be exposed to a fall hazard.
- Provide railings along all sides of working platforms.

Lineman Electrocuted While Performing Maintenance

A lineman was performing routine maintenance at a transformer station when he contacted a 2400-volt power source. The victim thought he had isolated the circuit but failed to test for electricity before he attempted the task. The victim fell to the ground unconscious and his clothes were on fire. A co-worker extinguished the victim's clothes and initiated cardiopulmonary resuscitation (CPR). According to a NIOSH Alert, *Request for Assistance in Preventing Fatalities of Workers Who Contact Electrical Energy* (NIOSH Publication 87-103), "Prompt emergency medical care can be lifesaving for workers who have contacted either low-voltage or high-voltage electrical energy. Immediate cardiopulmonary resuscitation followed by advanced cardiac life support has been shown to save lives." CPR was administered immediately after the victim contacted the electrical energy. He was revived, conscious, and alert when emergency personnel arrived. This is an excellent example of the importance of having CPR training in the workplace. The victim, while recovering from the thermal burns, developed secondary complications leading to death. Cause of death was determined to be organ failure due to electrical shock. To prevent similar incidents, the program recommends that employers:

- Ensure that linemen follow safe work procedures to de-energize, ground and verify through testing prior to beginning maintenance and repair operations on electrical transmission lines and equipment.
- Train employees who work around electrical transmission lines, electrical circuits and electrical equipment in cardiopulmonary resuscitation.

(continued on page 19)

(continued from page 18)

A key aspect of these investigations is the ability to view job-related fatalities as multifactorial events without assigning blame to the individuals, employees, or the employer. We believe this approach will enable us to collect more accurately needed data.

Reports of occupational fatalities or questions or comments should be directed to Thomas D. Ray, MO FACE Program Coordinator, at (314) 751-6102 or (800) 392-7245.

Custodians Exposure to Asbestos Fibers

(continued from page 15)

lated to the dusting and sweeping of a small store room that contained approximately 12 square feet of friable ACM.

Conclusion

Only one of 47 personal air samples and none of 91 area samples were found to exceed the OSHA standard. The one that exceeded the OSHA standard occurred while the custodian was sweeping in a confined space with friable asbestos. Because of the air-sample results and the custodians' normal work activities observed by the investigator during this study, it has been determined that building custodians who perform routine activities in areas that contain friable asbestos materials are not exposed to hazardous levels of airborne asbestos. We conclude that custodians' asbestos exposure is very low and does not pose a significant health risk to these employees.

Recommendations

- Custodians can do most routine work in buildings with ACM/TSI without asbestos exposure to levels exceeding OSHA standard.
- Custodians working in confined areas with friable SCM should use protective equipment.

What Cost Food Safety?

*David Stull, R.S.
Bureau of Community Sanitation*

In these days of shrinking budgets and program cutbacks, one could ask what would it cost if certain governmental actions were reduced or eliminated. Since incidents prevented are hard to measure, one may ask such questions of foodborne disease prevention activities. Do such activities cost or save? Consider the following information:

According to the Missouri Department of Revenue, the revenues from eating and drinking establishments in 1991 were estimated to be \$3.003 billion. Figures from the Food Marketing Institute show that if Missouri's share of the nation's retail food stores was only 1/50, it would be at least \$7.37 billion.

These figures indicate that in just these two segments of the food industry, we have a \$10 billion industry that could be of economic significance to the state of Missouri when adversely affected, as it would be in a foodborne disease outbreak or product recall. Therefore, based on economics alone, it appears that protection of the food industry from such adverse events would be beneficial to the Missouri economy.

According to some experts, foodborne illnesses in the United States cost from \$4.8¹ to \$8.4² billion annually. Some of the costs per case have been estimated as follows: Salmonellosis \$500 to \$700³; Botulism \$322,000⁴; and Listeriosis \$137,000³. These cost figures also include some indirect cost figures, such as pain, grief, suffering and death, and loss of productivity and leisure time.

If one uses the conservative national estimate for foodborne illness outbreaks of 6,253,536 persons at a cost of \$4.8 billion, this would translate into 128,200 Missourians affected by foodborne illnesses annually at an estimated cost of

\$98,400,000. Such figures would seem to be totally unacceptable, especially in times of economic difficulty; however, since the vast majority of foodborne illnesses go unreported, most of these costs remain hidden in a lost day of work or an evening spent enjoying the decorations in one's bathroom while in a great deal of discomfort!

Physicians treating individuals suspected of having contracted a foodborne illness should contact their local health department immediately so steps can be taken to limit the size of the outbreak and prevent its repetition.

The Missouri Department of Health currently does not have laws for licensure of food-service establishments. This allows some establishments to open without health department review and this can allow them to operate in an unsafe manner. Such legislation is expected to be introduced in the Missouri General Assembly during the upcoming session.

If you know or think you may have been a victim of a foodborne illness, you would agree that funds spent in the area of food protection to prevent such occurrences can result in great savings both directly and indirectly.

References

1. Roberts, Tanya, Human Illness Cost of Foodborne Bacteria. *Amer J Agr Econ*, May 1989, 71:468-74
2. Kvenberg, JE and DZ Archer, 1987 Economic Impact of Colonization Control of Foodborne Disease *Food Technology* 41(7):77-80,98
3. Anonymous, (1990) Annual Cost of Listeriosis at \$480 Million by USDA, CDC, *Food Chem News* 32(2):10
4. Todd, ECD, (1989) Preliminary estimates of Costs of Foodborne Disease in the United States. *J. Food Protection* 48:887-894

Syphilis Outbreak Leads to Emergency Declaration

*H. Denny Donnell, Jr., M.D., M.P.H.
Office of Epidemiology*

Dramatic increases in syphilis cases in metropolitan and in one rural area of the state led Dr. John Bagby, Director of the Missouri Department of Health, to declare a health emergency on November 12, 1992. In addition to increasing the publicity and health education about the disease, additional resources are being provided in the affected set of seven rural counties in the southeastern "Bootheel" area of the state.

District staff in the Bootheel identified several locations where syphilis patients could be referred for expeditious treatment. Additional clinic hours and physician time was provided in the St. Louis City clinic. Letters were sent to family planning and women's health-care facilities to encourage screening for syphilis. Additional financial resources have been requested through federal funding channels. Department of Health employees with training in sexually transmitted disease investigation have been reassigned on a rotating basis to respond to the emergency.

The increase in syphilis in St. Louis City and in the state was reported in the March-April 1992 issue of the *Missouri Epidemiologist* based on data from the latter part of 1991 in St. Louis and overall data for the state for several past years.

In 1987, Missouri reached an all-time low with only 90 cases of primary and secondary syphilis reported in that calendar year. Kansas City in that year had 42 cases representing 46.7% of the state total. St. Louis City had 17 cases in 1987, but only 10 in 1988. St. Louis County had 5 cases in 1987. The outstate areas had a total of 26 cases in 1987.

Kansas City continued to lead the state in syphilis cases until 1992 when St. Louis City took the lead. Cases in all areas increased in the years after 1987.

Syphilis in the Missouri Bootheel

The epidemic of infectious syphilis developed fairly dramatically during 1992 in seven counties in the Missouri "Bootheel" with successive quarters having 14, 32, and 52 and the last quarter projected to have 104 cases of early syphilis. There were 184 cases of primary (33), secondary (48) and early latent (103) syphilis reported as of December 15 from these counties. The preponderance of early latent and secondary suggests that the outbreak began fairly early in the year. The cases came to our attention in unusual numbers in Mississippi County in May. By September,

Pemiscot County had the most cases and New Madrid County and Butler County had high numbers of cases. Cases were fairly widespread.

In contrast, gonorrhea remained fairly stable in 1992 with an average of 22.6 cases per month through October. Pemiscot and Scott counties had the greatest number of gonorrhea cases.

The syphilis cases peaked in the age group 25-29, whereas the gonorrhea cases peaked in the 20-24 age group. When age specific rates by county are compared, the syphilis rates also peaked in the 20-24 age group in all counties
(continued on page 21)

Expanded AIDS Case Definition

On January 1, 1993, an expanded case definition for AIDS will become effective. This new definition will continue to include the criteria contained in the current case definition while adding any person with documented HIV infection who has any of the following conditions:

1. A CD4⁺ T-lymphocyte count <200 cells/ μ L (or a CD4⁺ percent <14);
2. Pulmonary tuberculosis;
3. Recurrent pneumonia (within a 12-month period);
or
4. Invasive cervical cancer

This expanded definition, like the earlier AIDS case definitions, has been developed primarily for use in conducting public health surveillance. Under this definition, AIDS surveillance will more fully represent those HIV-infected individuals who are severely immunosuppressed and at highest risk for severe HIV-related morbidity. In addition, it will include persons with conditions of major public health importance in the HIV epidemic. When the expanded definition becomes effective, it will immediately add approximately 500 cases to the total number of AIDS cases in Missouri, increasing this total by 15%.

Influenza Immunization Recommendations

L.T. Franklin, B.S.
Bureau of Immunization

In the United States, two measures are available that can reduce the impact of influenza; vaccination with a killed virus vaccine and therapy with an influenza-specific antiviral drug. The antiviral agent available for use at this time, amantadine hydrochloride, is effective only against influenza A and for maximum effectiveness as prophylaxis must be administered throughout the period of risk. When administered as either prophylaxis or therapy, the potential effectiveness of amantadine must be balanced against potential side effects.

The optimal time for organized vaccination campaigns for high-risk persons is the period between mid-October and mid-November. In the United States, influenza activity generally peaks between late December and early March.

Typical influenza illness is characterized by abrupt onset of fever, myalgia, sore throat and a non-productive cough. Unlike other common respiratory infections, influenza can cause severe malaise lasting several days. More severe illness can result if primary influenza pneumonia or secondary bacterial pneumonia develops.

Elderly persons and persons with underlying health problems such as chronic disorders of the cardiovascular or pulmonary systems, chronic metabolic diseases, renal dysfunction or suppressed immune systems are at greatest risk of complications of influenza infection. It is estimated that more than 10,000 excess deaths occurred during each of the seven different United States epidemics in the period 1977–88, and more than 40,000 excess deaths occurred during each of two of these epidemics. Approximately 80–90% of deaths attributed to pneumonia and influenza occurred among senior citizens. The number of younger persons at increased risk

Table 1. Guidelines for Use of Influenza Vaccine

Age Group	Product	Dosage	No. of Doses	Route
6-35 months	Split Virus	0.25ml*	1 or 2	IM
3-8 years	Split Virus	0.50ml*	1 or 2	IM
9-12 years	Split Virus	0.50ml	1	IM
>12 years	Whole or Split	0.50ml	1	IM

*Two doses administered at least one month apart may be required for a satisfactory antibody response among previously unvaccinated children less than nine years of age.

for influenza-related complications is also increasing.

“Influenza vaccine is recommended for any person greater than or equal to six months of age who—because of age or underlying medical condition—is at increased risk for complications of influenza.” This is a direct quote from the Centers for Disease Control, *Morbidity and Mortality Weekly Report*, May 15, 1992, Vol 41, No. RR-9.

All health-care workers and others (including household members) in close contact with high-risk persons should be vaccinated. In addition, influenza vaccine may be administered to any person who wishes to reduce the chance of becoming infected with influenza.

The trivalent influenza vaccine for the 1992–93 season includes A/Texas/36/91-like(H1N1), A/Beijing/353/89-like(H3N2), and B/Panama/45/90/-like hemagglutinin antigens. Guidelines for the use of vaccine among different groups are shown in Table 1.

Inactivated influenza vaccine should not be administered to persons known to have anaphylactic hypersensitivity to eggs or to other components of the influenza vaccine without first consulting a physician.

Because influenza vaccine contains only noninfectious viruses, it cannot cause influenza. The most frequent side effect

of vaccination is soreness at the vaccination site that lasts up to two days.

Reference

Centers for Disease Control, *Morbidity and Mortality Weekly Report* May 15, 1992, Volume 41, Number RR-9

Syphilis Outbreak Emergency

(continued from page 20)

except New Madrid County, where the peak was in the age group 25–34. The syphilis rates were highest in the age groups including 15–44 and were especially high in Mississippi and Pemiscot counties.

There were more females than males among the syphilis cases, but more males than females among the gonorrhea cases. This was generally true for the counties except that Scott and Stoddard counties had more female than male gonorrhea cases.

Syphilis and gonorrhea cases were both predominantly in black persons. Rates for blacks were many times higher than for whites for both diseases. Race specific rates for counties were higher for syphilis than for gonorrhea in Mississippi, Pemiscot and Butler counties, but much higher for gonorrhea in Scott, Stoddard and Dunklin counties, and slightly higher in New Madrid County.

Hepatitis A Currently Epidemic in Missouri

*H. Denny Donnell, Jr., M.D., M.P.H.
Office of Epidemiology*

Hepatitis A has been spreading in epidemic proportions in some areas of the state during 1992 and the total cases reported for the year are projected to exceed 1,350. The largest numbers of cases have been in the St. Louis metropolitan area, with 524 cases in St. Louis City in the first 50 weeks of 1992 for a case rate of 130 per 100,000 population, and 232 cases in St. Louis County where the rate is 23.3 per 100,000 population. Even larger case rates prevail in the Joplin area with 240 cases in Jasper and Newton counties representing a rate of 156.0 per 100,000 population. The Kansas City area had a large number of cases from 1988 through 1991, but this year has had relatively few, with 90 cases in Kansas City and Jackson County for a rate of 8.38 per 100,000 population.

During the first 50 weeks of 1992, there were 1,280 cases reported in the state for a rate of 24.8 per 100,000 population. The average number of cases reported in each of the past five years, 1987-91, was 708, for a rate of 13.9 per 100,000 population. The average number of cases reported in each of the preceding ten years, 1977-86, was 267, which represents a rate of 5.4 per 100,000 population. The lowest number reported was in 1985 with only 98 cases for a rate of 1.96 per 100,000 population.

There have been outbreaks this year in three other rural areas. In Camden County there have been 32 cases, Butler County has had 21 and Pike County has had 18 cases primarily related to an Amish community. Part of the Jasper/Newton epidemic was a waterborne transmission from a faulty water supply system at a church facility. Several small clusters of intrafamilial spread have been recognized. There have been several instances where the discovery of a case in a food handler provided the opportunity to provide immune globulin to other employ-

ees of the particular food handling establishment.

Immune globulin has been provided this year by the Department of Health and local health departments to over 7,500 persons identified as contacts of proven cases.

The great frustration to the control of the spread of hepatitis A is the large proportion of mild and inapparent cases who rarely even seek medical care and are therefore never identified or reported although they are effective participants in the unwitting spread through the community. Despite this reality, the use of immune globulin remains a useful measure when given to contacts of cases within the first few days after exposure. The sooner it can be administered the greater the protection it will provide. For this reason, cases should be reported rapidly and cases in communities where other cases are occurring should be reported when clinical suspicion is high and certainly without waiting for a repeat or confirming positive if the first test is suggestive of hepatitis. This allows time for the health department to interview the case, determine who the exposed contacts are, and arrange for

them to receive immune globulin within a suitable time, usually within 10 to 14 days of the exposure.

With each reported case during an epidemic, another small group of persons are provided protection for themselves and they become part of the barrier to spread within the community for the ensuing several weeks while their passive protection is effective. With each public media message about the epidemic, more people are reminded of the importance of hand washing, food preparation and sexual hygiene as measures to control the transmission of the virus. With each foodhandler case, another food establishment becomes acutely aware of the need for exercise of the greatest precaution in food preparation and other employees are provided immune globulin.

While this disease is difficult to control, these efforts are somewhat effective and until the recently developed hepatitis A vaccine becomes commercially available they are the major methods we have at hand and they should be applied with diligence. Physician reporting is the first and highly essential step in the control effort.

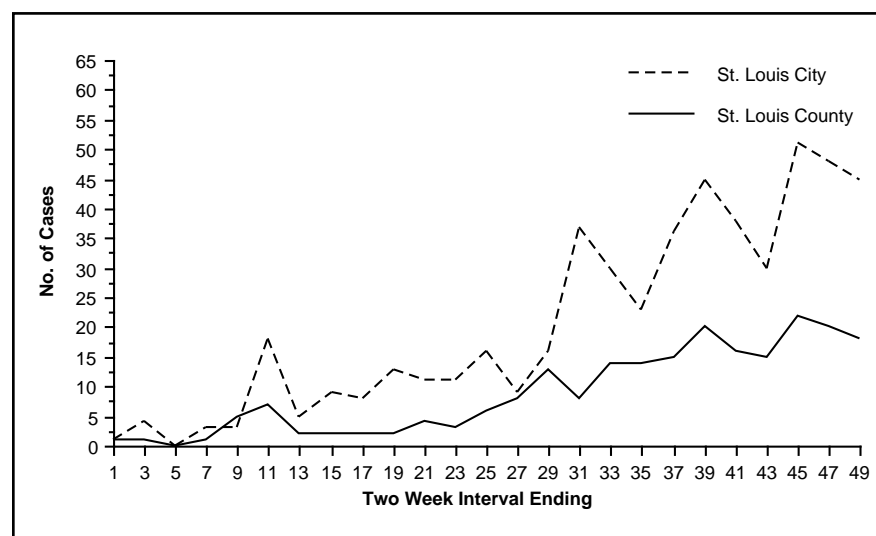


Figure 1. Hepatitis A cases by week of report, St. Louis City and County, Missouri, 1992.

Acute Hepatotoxicity Associated With Use of Chaparral

The Food and Drug Administration today warned the public against consuming chaparral—a widely distributed herbal product—because it is associated with acute toxic hepatitis. Chaparral has recently been linked to severe liver problems in at least four people in this country, one of whom is in grave condition.

“The public should not purchase or consume chaparral,” said FDA Commissioner David A. Kessler, M.D. “People with underlying health problems may be particularly at risk if they consume this product.”

The herbal product “chaparral” is derived from the ground leaves of the *Larrea tridentata*, commonly called creosote bush, which grows in the deserts of the American Southwest. The herb is used in teas, capsules and tablet preparations that purport to “cleanse” the blood stream, delay the aging process and treat various skin conditions.

In late August and early September 1992, FDA and the U.S. Centers for Disease Control and Prevention (CDC) were informed of two cases in which individuals consuming chaparral consistently over the course of several weeks suffered severe jaundice and abdominal pain. These cases and the potential link between acute, non-viral hepatitis and chaparral were discussed in an article published in the October 30, 1992, issue of CDC’s *Morbidity and Mortality Weekly Report*.

In these two cases, and a third that was reported to FDA and CDC on November 13, the patients apparently recovered after undergoing medical treatment and discontinuing their consumption of chaparral.

However, in a fourth case reported December 4, a person who had taken unknown quantities of chaparral became gravely ill with liver and kidney failure.

FDA, based on an evaluation of these cases, which involved more than one chaparral product, has determined that the ingestion of chaparral poses a potential health risk to the public. In particular, individuals with underlying liver damage due to acute or chronic disease could face severe, irreversible liver damage, and even death, from consuming chaparral.

FDA is continuing its investigation to obtain more information about the product and the extent and patterns of use. The agency will take appropriate action when more information is available.

Physicians who believe that their patients may be suffering adverse reactions to chaparral consumption are urged to notify FDA by contacting Dr. Lori A. Love at (202) 205-4198 or (202) 205-4561, between 9 a.m. and 5 p.m., Eastern Time, Monday through Friday. At other times, or if Dr. Love is unavailable, physicians may call FDA’s 24-hour Emergency Operations Line at (301) 443-1240.

FDA is one of the eight agencies of the Public Health Service within HHS.

Reprinted from December 10, 1992 Food and Drug Administration Press Release.

Physician Epidemiologist Joins Epidemiology Office

Robert H. Hamm, M.D., M.P.H. joined the Department of Health, Office of Epidemiology in November. He will provide medical consultation to the Bureau of AIDS Prevention, participate in other epidemiologic investigations and consultations, and assist in editing the articles for the *Missouri Epidemiologist*.

Dr. Hamm was employed for several years by the Indiana State Board of Health as a Medical Epidemiologist where he had responsibilities for surveillance and control of communicable diseases. He was the Acting Director of the Acute Disease Division during fiscal year 1990.

He is a native of Oklahoma and received his medical education, two years of residency training in psychiatry and a Masters Degree in Public Health at the University of Oklahoma. He then went to the University of Alabama at Birmingham for one year of residency in Preventive Medicine. He was certified in Public Health and General Preventive Medi-

cine by the American Board of Preventive Medicine in 1989. During fiscal year 1992, he studied at the Eastern Baptist Theological Seminary in Philadelphia and completed a Master of Arts in Theological Studies Program with a concentration in theology and public policy.

Dr. Hamm and his wife and son live in Jefferson City.



Published by the
Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65102-0570

The *Missouri Epidemiologist* is a regularly scheduled bimonthly newsletter published by the Division of Environmental Health and Epidemiology of the Missouri Department of Health. The division's responsibilities include the prevention and control of communicable diseases and environmentally induced illnesses, including the requisite epidemiological investigations.

The Managing Editor is H. Denny Donnell, Jr., MD, MPH, State Epidemiologist, assisted by an Editorial Board including Bill Schmidt, MPH, Director, and Hilda Chaski, MPH, Deputy Director of the Division of Environmental Health and Epidemiology. Diane C. Rackers is the Production Manager. Questions or comments should be directed to (314) 751-6128 or toll free (800) 392-0272.

This newsletter can be recycled.



Polio Threat Requires Urgent Response

*H. Denny Donnell, Jr., M.D., M.P.H.
Office of Epidemiology*

There is a fairly high probability that polio will be spreading to the Western Hemisphere and eventually to Missouri from a current outbreak of type 3 poliomyelitis which has spread to an estimated 50,000 infected persons in the Netherlands, with 47 paralytic cases, as of November 25. The outbreak is primarily involving members of the Amish religious group, many of whom have traditionally rejected immunizations. In 1979, type 1 poliomyelitis spread to Missouri from the Netherlands and in that epidemic one young Missouri Amish woman became paralyzed. The high number of infected persons in the cur-

rent outbreak greatly increases the probability of spread. Even the Amish, who generally adhere to a simple lifestyle after the fashion of the late 19th century, do travel extensively and have close kinship with others of their faith in distant states. The coming holidays may well see more travel and increase the probability that this virus will spread to Missouri.

Upon learning in early October of the first few cases in the Netherlands, the Missouri Department of Health began alerting the counties where known groups of Amish reside and provided messages to be hand carried to the local Amish bishops warning them of the possibility of risk from this epidemic and

encouraging them to promote vaccine use in their communities. The DOH has developed contingency plans to encourage and support immunization clinics among the Amish. When we learned in late November of the large number of infected persons in the Netherlands, we expanded the focus of our concern to include Mennonite and Christian Science groups.

Physicians and other health-care workers should have increased alertness during this period of urgent concern regarding children and young adults under their care who might benefit from polio immunization and also for making the diagnosis of polio in cases of unusual neurologic illness.